

Interdisciplinary Contributions to Archaeology

Style, Society, and Person



Archaeological
and Ethnological
Perspectives

Edited by
Christopher Carr and Jill E. Neitzel

Style, Society, and Person

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STYLE, SOCIETY, AND PERSON

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Style, Society, and Person

Archaeological and Ethnological Perspectives

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Cover design: "The Mask." The left half of the cover design is an adaptation of a set of overlaid human and animal images apparently representing one or more masks worn by an elite member of Ohio Hopewell Society (150 B.C.–A.D. 350) and rendered on a bone. From the Hopewell site (Chicago Field Museum of Natural History catalog number 56369).

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To Betty, Lorie, and Leonard for sharing craft, life, and spirit

—C. C.

To my parents, Jane and Robert E. Neitzel, with much love
and appreciation

—J. E. N.

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Preface

The beauty of the human condition is to be found wherever awareness and balance of its multiple dimensions transcend the veils of singular perceptions and paradigms. Only through experiencing and integrating many poles is the richness of the whole approached. So it is with the study of material style or any other mark of our humanity.

This book was conceived and is written in this light. The primary aim of this book is to integrate many of the diverse current and past understandings of material style. Twelve ethnologists, archaeologists, and artists combine efforts here to inventory and describe the essential factors that cause material style. The authors also review, define appropriate bounds for, and integrate theories that pertain to those factors, and build and test some new theoretical frameworks. Consideration is given to causal processes at multiple organizational scales, including the ecological–evolutionary, technological, sociocultural, social-psychological, personal behavioral, personal psychological, depth-psychological, and physiological scales. The various expressions of some of these processes in egalitarian and hierarchically organized societies, and in media and through crafting techniques of many kinds, are explored. Also, the manners in which different ranges of processes map to different kinds of stylistic traits is theorized and illustrated.

At some intuitive level, the recent drive in archaeology to include the uniqueness of context, history, and meaning in research on style—and the archaeological record in general—is an attempt to know again the peoples we study and to approach our humanity. The detached and splintered views of the human that positivist archaeologists took during the 1970s through the 1980s have rightly become unsatisfying by themselves. The trend to embrace the unique is continued in this book in a tempered way. Many chapters emphasize the contextual and historical-specific nature of expression of the processes that cause material style, and the correlations between process and form. Attention is given to “on-the-ground” behaviors and ideas in addition to “general processes,” and to the individual in addition to society and the ecosystem. Thus, in this book, no universal, decontextualizing theory of style is built or thought possible or desirable. However, multiple theories of style, which pertain to different contexts and causal factors, are integrated systematically with each other. And a middle-range theory and analytic strategies that assume the context-specific nature of rules and regularities are offered. In this way, as always, when awareness of both the whole and the particular and their dynamic is maintained, “information” is more easily transformed into intuitively satisfying “appreciation.” Anthropology becomes both a science and a humanity.

In investigating the complexity of style and the multiple views that are necessary to understand it, this book lays a philosophy and attitude for approaching style. It is concluded that to be a skilled analyst of style, the researcher should be a *whole anthropologist*—one who is broad-minded and capable of evaluating a very wide range of causal factors, from the ecological to the psychological. The researcher should also be willing to cross disciplinary lines into biology, material science, psychology,

and art when making interpretations. When limited by either paradigm or discipline, the potential for appreciation is compromised.

This book's path toward a balanced and integrated approach to style began in part as an extension of Carr's earlier professional and advocational work in quantitative archaeology and art. During the 1980s, Carr investigated how quantitative archaeological research might be made more logically consistent and accurate by explicitly bridging certain archaeological theories, quantitative techniques, and data structures to each other. A primary aspect of this work was enumerating the archaeological variables that are relevant to particular kinds of processes. Stylistic variables and processes were among those to which the most effort was given to systematize their interrelations. The unified, middle-range theory of artifact design presented in Chapter 7 developed from that effort. Carr's focus on style and the building of this theory, in turn, rests on his personal insights into crafting processes obtained through some twenty years of art training and work with many media.

With the development of a schematic framework for integrating theory on material style, Carr joined in research, thought, and writing with other archaeologists, ethnologists, and artists to broaden and test it. Kathleen Hinkle, Kathryn King, Robert Maslowski, John Pryor, Beryl Rosenthal, and Carr gave the unified theory tough cross-media tests through their analyses of prehistoric fabrics, cordage, basketry, cold-hammered metal ornaments, and carved wooden face masks. The results of most of these analyses are reported in Part III of this book. David Braun, Jerry Voss, and Beryl Rosenthal provided very essential concepts to the unified theory through their discussions with Carr about these analyses, their own research, and style in general.

Synchronous with this research, Jill Neitzel independently began her own studies of style and complex societies. Her studies emerged from the seminal and exciting intellectual environment that crystallized in the Department of Anthropology at Arizona State University during the late 1970s and early 1980s. Under the chairmanship of Fred Plog, faculty members and graduate students in the department produced a stream of new and often controversial ideas.

Many of these ideas pertained to the complexity of prehistoric Southwestern societies and the stylistic patterning of their ceramics. Neitzel wrote her dissertation on the regional organization and ceramic style distributions of the Hohokam in south central Arizona. Later, through her work on the distributions of pottery styles in the northern Southwest, she came to appreciate that previously applied models of stylistic patterning, which were derived from egalitarian societies, were not applicable to the prehistoric societies of the Southwest if they were hierarchically organized. She began her own investigations of stylistic patterning in complex societies.

Further theory development and integration was spurred by two symposia on style, which Neitzel and Carr chaired in 1985 at the Society for American Archaeology annual meeting in Denver. These were respectively entitled "Stylistic Patterning in Regional Systems of Interaction" and "Cross-Media, Technological, and Social Approaches toward a General Theory of Artifact Style." The two symposia complemented each other and spurred our collaboration on this volume. Some of the authors of chapters in this book participated in these symposia. Authors were selected for the different theoretical perspectives on style that they command and the different processes and media into which they have first-hand insight. Some have been key participants in recent debates about style; others are younger researchers who have attempted to resolve various issues with fresh data and ideas. Through the detailed planning, discussion, and reviewing of the chapters, all of the authors contributed significantly to the scope and integration of theory presented here. This book is very much a group effort.

We hope that the philosophy, theoretical framework, and examples in this book will help to broaden and balance future style research. We invite the reader to play with, as well as evaluate, our ideas and, in so doing, to help wed the ways of the arts and sciences in understanding material style as one aspect of our humanity.

Acknowledgments

The editors are most thankful for the vigor and flexibility of the contributors while the chapters were planned, themes were suggested, and specific topics were distributed among them. Our extended discussions were thought-provoking and essential to the integrated view of style presented here. We also thank several anonymous reviewers, Michael Jochim, and Eliot Werner for a number of suggestions that helped to clarify our ideas and their presentation. A special thanks is also owed to Trudy Brown for her thoroughness and patience throughout the production process. We especially appreciate the work of Marsha Schweitzer, who entered and reformatted much of this book on the computer.

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Part I

Introduction

Chapter 1

Integrating Approaches to Material Style in Theory and Philosophy

CHRISTOPHER CARR AND JILL E. NEITZEL

Truth is ever-expanding awareness.

WILLIAM DAVID

Form and spatial distribution: These are the two most fundamental axes of variation in material culture that archaeologists use. They are essential to describing, classifying, and analyzing the archaeological record. They are the primary data used in identifying, explaining, and interpreting the archaeological record, whether reconstructing or writing the past. Traditionally, formal variation in material culture over space has served to distinguish past social groups, to define their chronological positions, and to reconstruct their behaviors, organization, and ideas at specific points in time.

However, the concept of style, which is central to these tasks, is currently controversial and confusing for archaeologists. Basic questions have been raised over the past 10 years about what the term “style” means, how material variation should be studied, and what the results of stylistic analyses can and cannot tell us about past societies. More specifically, archaeological literature on style has questioned or become ambiguous about whether style is a material or processual phenomenon. If style is a material phenomenon, what kinds of formal variability constitute style? What is the range of cultural, social, material, and other processes and constraints that determine style? What are the contexts under which these factors are effective? At what phenomenological level(s) should causation of stylistic variation be sought, such as the ecosystem, society, or the person? Considerable uncertainty has also developed over how history, context, and emic viewpoints can be brought into studies of style without resulting in particularism, and whether particularist goals are acceptable. These issues concern both the middle-range theoretical task of identifying past processes or conditions and the higher theoretical task of understanding them within some anthropological or social scientific paradigm.

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Efforts to answer such questions have resulted in a dramatic increase in the amount of research on style over the past decade. A variety of media and geographic areas have been explored and new theoretical perspectives have been developed. Key results of many of these substantive and theoretical efforts are presented, reviewed, and critiqued here in 13 chapters by archaeologists and ethnographers.

In presenting and discussing this research, an integrated theoretical framework for the anthropological study of material style is built. Integration and coexistence of diverse theories of style, rather than their unification from some single perspective, appears to be the most logical and productive approach for studying style at this time (see also Wiessner 1990).

Integration is facilitated by several means, at the levels of high theory, middle-range theory, and philosophy. Most central to the thrust of this book is envisioning, in a hierarchical manner, the form and spatial organization of a material cultural system, the processes, regulating mechanisms, meanings, and other causal factors that define it, and the potentially explanatory theories that pertain to those factors. Different causal factors are shown to pertain to different formal levels and spatial scales of organization of a material system. Our title, *Style, Society, and Person*, encapsulates this hierarchical viewpoint. From this perspective, different boundary conditions (Hemple 1966) are then placed on the various current theories of style by stating the particular formal level(s) and spatial scale(s) of organization to which the theories apply. In so doing, the complementary rather than competing status of the theories is revealed.

Our strategies for integrating current approaches to style focus on high theory, middle-range theory, and practice, but not on epistemology. The perspective offered here embraces the recent calls of postprocessual archaeology to seriously consider local context, particular history, coherent internal meanings, part-whole relations, and individual-society relations in the analysis of material style. However, integration of the postmodern, poststructural, critical, and hermeneutical epistemological assumptions behind these calls is not attempted.

The chapters that follow this introduction are divided into three parts: Part II considers high theories of style; Part III addresses middle-range theory; Part IV presents case studies of complex societies.

The chapters in Part II systematically inventory and exemplify the broad range of factors that can determine "formal" variation in material culture. The factors range in scale from ecological to sociocultural to psychological ones. The chapters in Part II also review and evaluate current theories about these causal factors.

The descriptions in Part II of the many kinds of causal factors that can determine formal variation in material culture lead naturally to the middle-range theoretic question addressed in Part III. This question is: Which specific determinants of an artifact's form are reflected in which of its specific attributes, and under what contextual conditions? If an artifact's style is perceived and can be analyzed partitively, then which attributes reflect, for example, technological constraints, the identity of social units of various spatial scales, personal identity, or motor habits? The problem is to find objective criteria for isolating sets of attributes, dimensions of attributes, or artifact classes that reflect and can be used to identify specific past processes. Also, the criteria must be justified through middle-range theoretic arguments that link resultant forms to their determining processes. The task of isolating and justifying the variables that are relevant to single processes is a fundamental requirement for logically concordant and accurate analysis and meaningful interpretation (Carr 1985).

The chapters in Part III build, test, and illustrate a coherent middle-range theory for isolating attributes that are relevant to particular processes. The arguments that are used to bridge resultant forms to their causal processes involve some parameters that have been considered previously, such as attribute visibility and geographic distribution. Other parameters are new.

In all of these arguments, however, the linkages between form and process are drawn here more finely and flexibly than has hitherto been typical. This is done, first, by considering specific "real world," "on the ground" behaviors (e.g., artisan decisions about message priorities), rather than

“composite, generalized processes” (e.g., information exchange). In other words, attention is focused on the *microdynamic processes* behind stylistic variability, distribution, and change, rather than on highly abstract, cross-cultural “principles” that simply describe or generalize about the *results* of microdynamic processes. In this way, the approach taken here differs from earlier systems and information theoretic perspectives on style (e.g., Wobst 1977; Conkey 1978; Braun and Plog 1982).

Fine and flexible linkages between causal processes and resultant forms are also drawn by accommodating the particulars of local history and context and by considering how these come into play in microdynamic processes, thus altering any general, cross-cultural tendencies in form–process relationships. For example, social situations that differ in character may encourage different message priorities among artisans and the communication of different messages, stylistically. Finally, the linkages between form and process are drawn so as to consider the variable effects of different material media.

The chapters in Part IV continue the theory-building efforts begun in Part III, but shift emphasis in two ways. The first way is in the level of formal variability considered. The chapters in Part IV concentrate on artifacts and their alternative classes within multiclass material systems, whereas the chapters in Part III concentrate primarily on formal attributes and their alternative states within a single artifact class. The second way is in the scale of social complexity examined. The chapters in Part IV focus on stylistic processes in chiefdom and state-level societies, whereas the chapters in Part III deal primarily with simpler societies.

In considering style within complex societies, the chapters in Part IV differ from most previous stylistic research, which has focused almost entirely on band and tribal societies. The chapters document the complex stylistic processes and patterns that arise with vertical and horizontal role segregation. Different artifact classes are found to reflect different forms of communication, interaction, and/or social strategies among various social segments. Single artifact classes are likewise found to reflect multiple processes. Some but not all classes are found to have hierarchical geographic distributions. The chapters in Part IV show that the study of these kinds of material patterns and their causal processes requires social and middle-range theory beyond that used in studying egalitarian societies. Also, analytic methods beyond simple measures of diversity, similarity, and homogeneity are necessary. The chapters clarify the issues that lie ahead in developing systematic theory and methods for studying style in complex societies, and emphasize the importance of contextual analysis.

Throughout this book, a wide range of media are used to critique, build, and test high- and middle-range theory about style. The media encompass not only pottery, which has been the focus of archaeology’s development of style theory since the “ceramic sociology” of the 1960s (Sackett 1977), but also cordage, fabrics, basketry, wood carving, stone jewelry, metals, architecture, and site plans. Considering diverse media is essential to building middle-range theory about style because style is embedded in technology (Sackett 1985). Technological processes provide a framework for partitioning formal variation into attributes and for organizing attributes hierarchically in a manner that is relevant to the many possible processes that can cause a style.

In addressing the topic of style, this book focuses on patterning in material artifacts—what might best be termed “material style”—which, in turn, is the product of various causal processes and constraints. This book does not consider style in its broadest sense, as a “way of doing” (Hodder 1990:46) that may crosscut multiple genre and may include ideas, decisions, and practices within a cultural–behavioral system. Instead, ideas, decisions, and practices are taken to be elements that, in part, cause and explain a material style. Also, this book does not consider style in the sense of a cultural “configuration” or “pattern” or form of organization of a cultural system (Benedict 1934; Kroeber 1957, 1963).

The remainder of this introduction has two parts. First, a succinct review is offered of many dimensions of recent debates among anthropologists about material style. This review makes clear the need for an integrated, if not unified, framework for speaking about, analyzing, and interpreting

material style. Second, the several means by which integration is sought in this book are summarized. These include synthesis at the levels of high theory, middle-range theory, and philosophy of science. Key contributions toward this goal that are made in this book are noted. More detailed summaries of these and other significant contributions to style theory are given in the three introductions to Parts II, III, and IV.

CURRENT DEBATES ABOUT STYLE

Over the past decade, archaeologists have come to define and discuss style with increasing uncertainty and, in some cases, narrowness and polarization. This is evidenced in the proliferation of debates and contrasting viewpoints about style. Some fundamental axes of disagreement are as follows: (1) How should style be discriminated conceptually and operationally from function and technology? (2) What factors determine style? (3) How important are contextual factors in determining style? (4) Which attributes of a style are more or less relevant to reconstructing past processes, conditions, and social units? and (5) Should style be defined in empirical, material terms? Finally, several epistemological issues concerning the archaeological uses of style have been raised. Resolutions for each of these dimensions of disagreement are offered in the chapters of this book.

The discrimination of style from function conceptually and operationally has been made and debated by Binford (1965:199–203, 1986), Dunnell (1978), and Sackett (1982, 1986). These authors have respectively used systemic, technological decision-making, and selectionist perspectives to draw their distinctions. Likewise, the relationship of style and technology has been envisioned in multiple ways. Style has been seen as embedded within technology (Sackett 1977, 1982). Technology has been defined as an aspect of style (Lechtman 1975:6; Sackett 1986:630), as a “way of doing” (Conkey and Hastorf 1990:2–3; Hodder 1990). Finally, style has been defined as independent of and a residual of both functional and technological variation (Binford 1965:199–203; Binford and Binford 1966:245–246).

The processes and constraints that determine material style, and how stylistic variation is to be interpreted in terms of these, are also at issue (see Carr, Chapter 6, Table 6-2). Braun and Plog (1982), emphasizing a dichotomy drawn by Wobst (1977), questioned the long accepted view among anthropologists that the determinants of artifact styles are traditional norms which reflect enculturation (see also Roe 1980). They proposed, alternatively, that artifact styles are determined by social and individual conditions and needs that are adaptive to communicate at the time of artifact manufacture and use. These two views of the causes of material style stand at the foundation of the contrast between the social interaction and information exchange theories of style.

Sackett (1985), Wiessner (1984, 1985), and Hodder (1982a) have also focused on different primary determinants of artifact styles in their isochrestic, symbolic–iconographic, and action/social–dialectical views of style. These determinants are, respectively: (1) passive enculturation; (2) human intent to actively communicate social and personal identities in order to define social relations; and (3) human intent to establish guiding templates for social action and justifications for social strategies. Within the information exchange/iconographic theoretical tradition, the range of messages that style communicates has been narrowed over time from social and personal identities, conditions, imperatives, regulations, and such (Wobst 1977), to social and personal identity alone (Conkey 1978; Wiessner 1984, 1990; MacDonald 1990). Carr (Chapter 6) describes this narrowing in detail.

The culture-specific, contextual factors that surround the production and use of artifacts are also given varying analytical and theoretical weight as determinants of material styles by archaeologists. Well acknowledged, although not consistently compensated for analytically, are the effects of the nature of the social situation and the distance of artifact viewing; enculturation patterns; artisan mobility; adoption and marital patterns; population density; artifact exchange; and artifact breakage,

deposition, and other formation processes (e.g., Bunzel 1929; Schiffer 1972; Stanislawski 1973; Plog 1978; Roe 1979; Lathrap 1983; Braun 1991). In contrast, the effects of culture-specific values, beliefs, and world view on material style are rarely thought significant and considered analytically. At issue here is not whether style can be used to express ideology, which it clearly can symbolically (Lechtman 1975) or iconographically (e.g., Penny 1983; Phillips and Brown 1978; Coe 1989; Marcus 1989). Rather, at issue is the degree to which and ways in which the material symbols of social interaction, communication, and social strategies are constrained by and expressed through the dominant principles of symbolic meaning of a society (Braithwaite 1982; Hodder 1982a:125–184). In other words, how does the social operate through the ideological as represented in material imagery?

At the analytical level, debate has surrounded the selection of appropriate attributes. Which attributes are relevant for analysis in that they are sensitive to or reflect specific behavioral processes, past conditions or contextual parameters, or specific social units, and thus allow the identification or measurement of these? Wobst (1977) hypothesized and showed that the likelihood of stylistic attributes being used to communicate various messages of social units of varying scales depends on the levels of visibility of the attributes. More visible attributes may bear the messages of broader social units (but see Carr, Chapter 7). Complementarily, Friedrich (1970) showed that attributes that are less easily decoded and comprehended are better measures of interaction among persons or social units.

Since these seminal publications, however, several issues regarding attribute selection have arisen. First, and most simply, does the operational distinction between discrete and continuous stylistic attributes drawn by Voss (1982) adequately capture differences in attribute visibility and comprehensibility that constrain the processes that attributes may reflect? Second, are structural aspects of a style better indicators of social groups than iconic design elements or “schemata” (Plog 1982, Chapter 11; Washburn 1982, 1983, Chapter 4; Jernigan 1986)? Third, are structural aspects of a style always indicative of an ethnic or cultural group (Washburn 1983:5, Chapter 4), or can they reflect social groups of varying scale, depending on the context and aspect of structure described? Fourth, can structural aspects of a style represent active symboling, social communication, and social strategies, or is structure always a passive, traditional, rule-bound feature of a style (Hodder 1986: 47–48; Washburn, Chapter 4)? Finally, is it possible to archaeologically isolate and verify culturally recognized, “emic” attributes (Muller 1979:173–176; Jernigan 1986; Plog, Chapter 11), and is it possible to interpret the ideological meaning of those attributes through their contextual associations in the archaeological record (Hodder 1982a), and at what level of specificity?

More fundamentally, opinion further varies as to whether style should be defined in empirical (i.e., observable) material terms. Traditional, art–historical, cultural anthropological, and archaeological culture–historical approaches to style (e.g., Shapiro 1953:28; Kroeber 1957; Deetz 1965; Gardner 1970) have defined style in material and contextual terms. A style is characterized by its forms, relationships among forms, part–whole relationships, gestalt–perceptive qualities, and, to some extent, its consistency and coherence in space–time. In archaeology, movement away from this material definition has been in two directions: toward abstraction and toward behavioral process. The first movement is found in the emerging view of style not as observable facets of surface content, but as abstracted, underlying, static, model structures and relationships among content (Lechtman 1975; Washburn 1977, 1983), or underlying generative grammatical rules to be inferred from surface content (Friedrich 1970; Muller 1979; Roe 1980; Knight 1986). The second movement is found in the more common yet implicit trend over the last two decades to shift the criteria for defining style from observable formal patterning in the archaeological domain to determining processes in the systemic domain, which have uncertain empirical correlates (Wilmsen 1974:93; Wobst 1977; Conkey 1978:66; Wiessner 1983:256; Sackett 1985:157; Conkey and Hastorf 1990:2; Hodder 1990:46,51).

Both movements have had positive and negative effects. The grammatical movement toward abstraction has enhanced our tools for describing material style. However, descriptions of form have not usually been linked adequately to the various processes that determine form (e.g., Muller 1979;

Chippindale and Boast 1986; Knight 1986). As Muller (1979:173–176) and Roe (1979:210) point out, model structures and rules can be simply formalisms, without congruence to “real-world” processes. In contrast, the processual approach to defining style has broadened our understanding of the range and nature of processes that determine artifact style. However, it has confounded explanatory phenomena (processes) with that to be explained (material style). This has led, as Sackett (1985:159) has rightly objected, to logical tautologies in the interpretation of the past.

At a most basic, epistemological level, archaeologists are now evaluating the merits of the different ways in which material style has implicitly been conceptualized in the course of being used to achieve the various and changing goals of archaeology (Conkey 1990). Initially, material style was conceived of as an “analog” of culture. This allowed the culture–historical goals of establishing chronologies and delimiting social groups seemingly to be met. Later, style was taken as an “indicator” or “code.” Material style as “text” was read etically for the culture–historical purpose of reconstructing past lifeways and for the sociological purpose of measuring specific processes that explain culture change.

Today, these two views still predominate in the day-to-day workings of archaeology, yet are challenged by the postmodern, poststructural, critical, and hermeneutical theoretical movements within contextual archaeology. Material styles are said to tell more about the contexts in which social groups are created and individual-to-group interrelations are worked out than about groups and group boundaries, *per se* (Conkey 1990:12–13; Hodder 1990:46,49). This is thought to be so for several reasons: Most basically, the conditions and pressures of past social contexts (e.g., contexts of fear versus safety, affluence versus scarcity, intergroup versus intragroup competition) influence the choices and actions of persons, including the uses of style (Wiessner 1988). More theoretically, styles, cultures, and social groups are seen as productive acts aimed at constructing meanings, which necessarily vary contextually and historically (Conkey 1990). Also, the ambiguity with which style links the particular to the general requires that it be interpreted (Hodder 1990:46) rather than read as an indicator of past processes or conditions.

In turn, these newer theoretical and epistemological positions on style have become enmeshed with the larger issue of whether archaeology is a nomothetic scientific discipline or a particularistic, historical, and/or politically focused discipline (Hodder 1982b; Earle and Preucel 1987). Regarding the last, it is said that past styles can be interpreted for contemporary sociopolitical purposes because the past is partly constructed in the present (Renfrew 1989) through “interpretation” rather than “decoding” (Conkey 1990:7). However, accepting that any social situation or style can be interpreted in multiple ways, depending on the viewpoint of the perceiver—be that person a participant in the culture or an outside researcher—there still remains the issue of professional responsibility and sensitivity to past peoples when rendering their endeavors and motivations, including their material styles. Casually accepted, the constructivist attitude not only allows the conscious reading of cultural and personal agendas into the archaeological record, but also facilitates the unconscious projection of the researcher’s own cultural and personal issues upon the past (e.g., Hodder 1990 vs. Wiessner 1990:111) unless explicit methodological checks are imposed (Hodder 1991).

In sum, it is fair to say that the multiple approaches to style thus far taken have been helpful in revealing its complexity and its determinants. Yet they also have reached a critical level of proliferation and contradiction. So few assumptions and notions about style are shared among professional anthropologists that they can no longer present and discuss stylistic analyses without first establishing their positions relative to a cumbersome history of contrasting thoughts (Conkey 1990). Moreover, we see in the classroom today that students who have not grown up with these intellectual developments find the literature on style increasingly more difficult to organize, integrate logically, and evaluate. Finally, the diversity of unintegrated approaches to style that archaeologists use to analyze and interpret the archaeological record leaves their reconstructions highly open to debate. For these reasons, a more integrated framework for analyzing and interpreting material styles is required and offered in this book.

INTEGRATING CURRENT APPROACHES TO STUDYING MATERIAL STYLE

In the course of this book, integration of the diverse approaches that are currently taken to studying material style is facilitated through five steps. These steps are made at the levels of basic description, high theory, middle-range theory, and philosophy of science.

First, the diverse processes and constraints that determine style are enumerated and described in detail. These include selective—evolutionary and historical processes (Braun, Chapter 5); material, social, economic, political, ideological, demographic, ecological, and archaeological-formational processes (Roe, Chapter 2; Pryor and Carr, Chapter 8; Rosenthal, Chapter 10); social-psychological processes (Voss and Young, Chapter 3); cognitive and perceptual factors (Washburn, Chapter 4); and some personal and personal psychological, depth-psychological, and physiological factors (Carr, Chapter 7; Pryor and Carr, Chapter 8; Rosenthal, Chapter 10). Some of these factors, such as selection, social-psychological processes, decision making, and depth-psychological factors, are more universal in their nature and occurrence. Others vary among cultures or with the social situation. The effects that the various factors can have on material style are richly illustrated at the detailed level of microdynamics through both ethnographic and archaeological applications (especially Roe, Chapter 2; Pryor and Carr, Chapter 8; Rosenthal, Chapter 10; Morris, Chapter 13).

The second step by which integration is facilitated here is at the level of high theory. Major anthropological theories of material style are reviewed and, when possible, nested within broader theoretic frameworks. Voss and Young (Chapter 3) and Braun (Chapter 5) review and critique the assumptions behind the social interaction, information exchange, and social-dialectical/symbolic approaches to style from social-psychological and selectionist perspectives, respectively. Voss and Young go on to show how the three schools of thought are special cases of social-psychological theory about the dynamics of self-definition and re-creation, and how each school implicitly assumes an incomplete and complementary view of the self. In this way, Voss and Young nest the three approaches to style within a more encompassing social-psychological framework. Similarly, Braun shows how isochrestic and iconographic variation, which are the differing subjects of the three schools, can each have social effects, and can thereby be accommodated as special cases within selectionist theory. Selectionist theory concerns the varying effects of alternative stylistic and other cultural practices, and the implications of those effects for the differential transmission and perpetuation (i.e., selection) of those practices. Finally, in Chapter 14, Carr and Neitzel suggest how a selectionist theory that combines ideas from both Braun (Chapter 5) and Hill (1985) can serve as an umbrella framework for integrating many processes that determine material style and its change or stability over time. These processes include natural selection, cultural selective processes that do not involve choice, and cultural selective processes that do involve choice. In turn, robust forms of decision theory (Arrow 1951; Limp and Carr 1985) and social-psychological theory about personal choices made in the re-creation of the self stylistically can be nested within selectionist theory to describe those cultural selective processes that involve choice.

The third step that is taken here to integrate the diverse, current approaches to style shifts our attention from integration at the level of high theory about causal processes, to synthesis at the level of middle-range theory that links causal processes to resultant forms. In this step, the many processes and constraints that can determine a style and the various theories of style that pertain to those factors are ordered hierarchically by the phenomenological level to which they pertain (e.g., the ecosystem, society, social segments, the person).

Four somewhat different hierarchical frameworks for ordering processes and theories were developed by the authors here as they attempted to integrate stylistic theory. The first three frameworks provide only partial inventories of the phenomenological levels to which causal processes pertain. First, Roe (Chapter 2) speaks of the psychological, formal, social, mythic, and structural levels of style. Second, Carr (Chapter 7: Table 7-2) defines a more detailed hierarchy of processes that is more

easily bridged to resultant material forms. The phenomenological levels that he considers are the technological, social, interacting artist, personal behavioral, personal psychological, personal physiological, panhuman depth-psychological, and panhuman physiological levels. Processes are also ordered among and within these levels by whether they are active or passive, conscious or unconscious. The hierarchy is derived from various models of nature and society found in ecological anthropology and Jung's (1971) and von Franz's (1964) models of the unconscious and the self. Third, Voss and Young (Chapter 3) refine the social and interacting artist levels from a social-psychological perspective, drawing upon Hsu's (1985) model of the self. Voss and Young speak of the "intimate society," "operative society," and the "wider society and the outer world." Combining these three frameworks provides the most complete ordering of processes. This synthesis is summarized in Figure 1-1 and discussed below.

The phenomenological levels depicted in Figure 1-1 are much broader than those upon which current archaeological theory about style focuses. Most work on style has dealt with processes at the levels of the operative society, small groups, and the individual (Braun, Chapter 5).

The fourth step that is taken in this book to integrate current approaches to style is building a middle-range theory that logically links the many causal processes that have been inventoried and ordered to resultant attributes that comprise an artifact's form (Carr, Chapter 7). Attributes of a population of artifacts are ordered hierarchically according to objective criteria: their visibility, decision order, and production order. Then, through many bridging arguments, attributes at different hierarchical levels are associated with different, sometimes overlapping sets of potentially causal factors at various phenomenological levels. By implication, those same attributes are also linked to high theories of style that pertain to those causal factors. In this way, operational "boundary conditions" are defined for the theories.

The strategy of arranging processes and formal attributes hierarchically in order to bridge them is more than a convenient formalism or a following of historical precedent (e.g., Whallon 1968; Friedrich 1970; Redman 1977:46–49; Braun 1977; Plog 1978). It reflects the real-world, nested organization of process within process and form within form. For example, the design attributes that an artisan chooses to express his or her individuality are usually drawn primarily from a larger, socially constrained pool of alternative attributes that is the product of historical and other contextual factors. In turn, both socially and individually selected design alternatives fall within a broader set that is constrained by technological raw materials and procedures.

The final step toward integrating high theories on style is taken at the level of philosophy of science. A logical distinction is made explicit between four, often confused, types of factors that can determine material style. These are: (1) dynamic processes; (2) the constraints (or conditions, adaptive milieu, or contents) that define, promote, or discourage those processes; (3) the sets of unique events (or history) that trigger the activation of processes; and (4) the regulating structures that permit the survival of the system by controlling processes. Causal factors of each logical type occur at each of the phenomenological levels mentioned above, as shown in Table 1-1.

The significance of these distinctions is that the four different logical types of causal factors play different logical roles in theory and explanation, as will be discussed. Understanding the different roles played by different kinds of causes, and seeking broad theoretical frameworks that evoke all of these kinds of causes, encourages theoretical integration.

Definition of the four kinds of causal factors can be clarified by way of a physical example and a material style example. Suppose the thing to be explained is the flow of water through a drainage pipe. One relevant dynamic process would be the dynamic pattern of water flow, as measured in various ways (e.g., its turbulence). Some constraints or conditions that define the dynamics of the flow would be the pipe, its form, and the force behind the water stream. A triggering event that could activate the process would be a rainstorm.

Regulating structures would also have a part to play in explaining the flow of water. Regulating structures are selected for and evolve within a system in response to triggering events and the

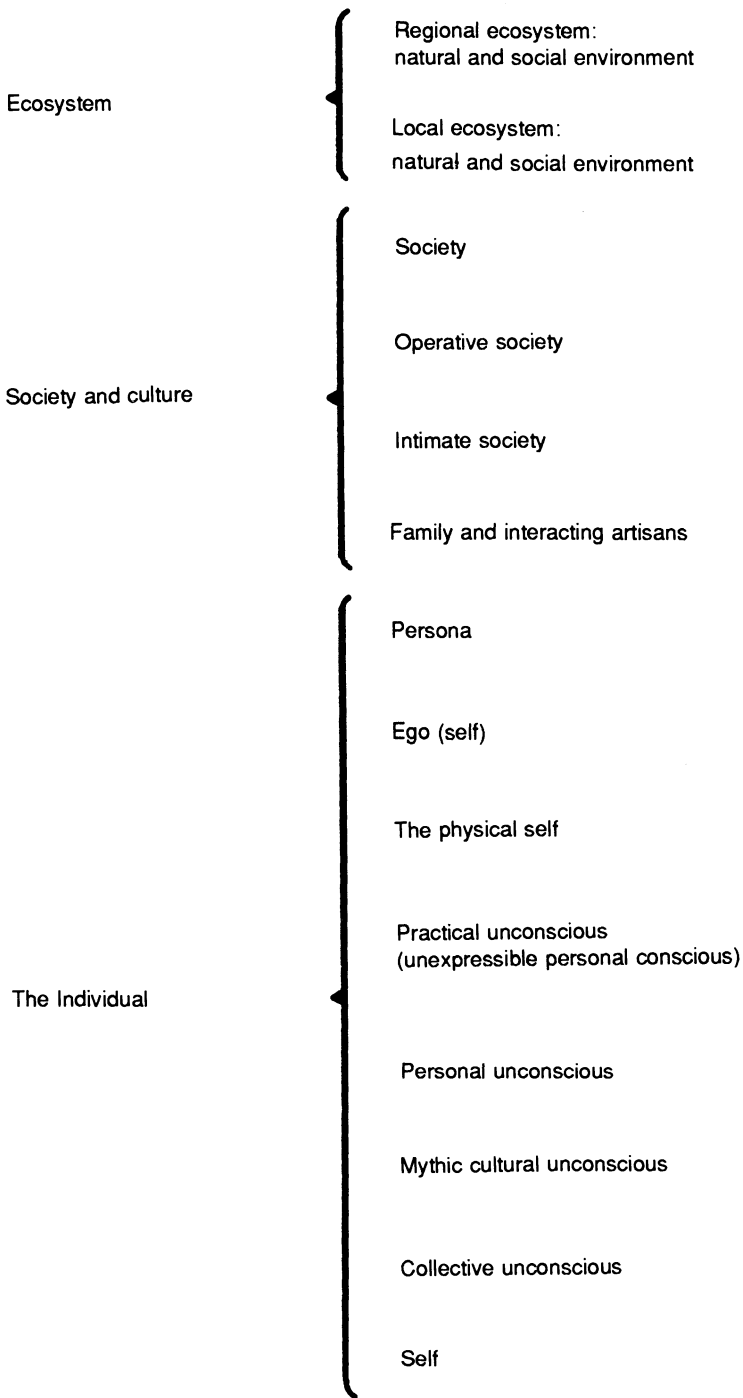


Figure 1-1. Phenomenological levels within which the factors that determine material style operate.

Table 1-1. Components and Phenomenological Levels of a Complete Explanatory Framework on Material Style

Phenomenological level	Regulating structures	Processes determining style; theoretical approaches	Conditions, constraints, adaptive milieux, & content determining style	Unique triggering events (history) determining style (some not knowable archaeologically)
Ecosystem and regional demography (ecological anthropology)	Regulating structures only indirectly pertain to material style (e.g., biological regulators of population density)	Natural selection Ordered sequences of adaptation	Euclidean geometry of the physical world Natural access to raw materials Social—regional access to raw materials Raw material properties Natural factors defining costs of artifact production and artifact value Natural factors affecting population densities Natural factors affecting degree of contact between societies Abundance of basic resources	Natural environmental events affecting raw material availability & costs of production Natural environmental events affecting population densities (e.g., a disease, drought) Natural environmental events affecting contact interaction, & exchange between groups (e.g., increasing risks to subsistence, rainfall, & trail conditions)
Society and culture (Hsu 1985)	Pansociety rules on the appropriate contexts of use (spaces, activities, rituals) of artifact classes Pansociety rules that set stylistic message priorities, situation independent or dependent Pansociety grammatical rules of style	Cultural selection Information exchange: pansociety regulating messages—economic, political, social identity, world view, mythic & religious themes Diffusion between societies	Social access to raw materials Social factors affecting costs of artifact production & artifact value Pansociety population density & its effect on daily interaction rates, audience sizes, viewing distances Sociocultural factors affecting degree of contact, cooperation, competition between societies Known technology Artifact curation and use/life Extant pool of isochrestic design alternatives (historicity)	Pansociety events affecting raw material availability, costs of artifact production, artifact value (e.g., territory & clay resource loss or acquisition) Pansociety events affecting population density (e.g., emigration, immigration) Pansociety events affecting contact between groups, interaction, artisan mobility (e.g. social costs, risks of travel)

<p>Institutionalized world views, beliefs, values</p> <p>Language categories</p> <p>Ideology</p> <p>Law</p> <p>Social concepts of the self</p> <p>Socioculturally dictated message priorities, situation independent & dependent</p> <p>Socioculturally dictated weighting of media for their communication potential</p> <p>Factors affecting between-society diffusion: grammatical, symbolic, & semantic similarity of styles of societies, artisan mobility</p>	<p>Pansociety events affecting social practices and ideas (change in leadership, rise of religious figures or the Great Individual)</p> <p>Pansociety events affecting message priorities, situation independent & dependent (e.g., population intrusion, raid)</p>
<p>Operant society, intimate society, small-group/interacting artists (Hsu, 1985; Pryor & Carr, Chapter 8)</p> <p>Local rules or traditions on the appropriate contexts of artifact use and situationally dependent message priorities</p> <p>Local grammatical rules of style</p>	<p>Information exchange: social messages & active expression of dialectical oppositions between social segments; personal messages</p> <p>Stylistic legitimization of social strategies</p> <p>Stylistic mimicry during migration, acculturation</p> <p>Performance and re-creation of the self (reactive)</p> <p>Image management and re-creation of the self (proactive)</p> <p>Small-group decision making</p> <p>Transmission: enculturation, casual learning and diffusion through interactions</p>
<p>The social situation, group size, & their effects on interaction & viewing distances</p> <p>Audience size & viewing distance as functions of the social situation</p> <p>Artisan-chosen message priorities depending on the social situation</p> <p>Extant pool of isochrestic design alternatives (historicity)</p> <p>Local variants of world view, beliefs, values</p> <p>Local variants of language categories</p> <p>Factors affecting enculturation, casual learning, diffusion: artisan mobility; power relations; kin relations; acceptability of creativity; realms of protected deviation; archiving; grammatical, symbolic, & semantic similarity of styles of groups</p>	<p>Localized factors affecting group size, contact, & interaction between & within groups; group practices & ideas; raw material availability; costs of artifact production; artifact value; artisan-chosen message priorities (e.g., feud, territory—wealth loss or acquisition, rise of a big man)</p> <p>Family or group unique history of interactions with others</p>

(Continued)

Table 1-1. (*Continued*)

Phenomenological level	Regulating structures	Processes determining style; theoretical approaches	Conditions, constraints, adaptive milieu, & content determining style	Unique triggering events (history) determining style (some not knowable archaeologically)
Conscious person	Regulating structures only indirectly pertain to material style	Decision making "Rule replicative behavior" "Rule creation behavior" (Roe, Chapter 2) Habitual methods of manufacture	Conscious knowledge Personally known technology Personally known pool of isochrestic design alternatives Artisan-chosen message priorities Ego drives Personal preferences, goals, strategies Personal beliefs, world view Ideolect Active memory capacity & information processing capability	Events & personal history of interactions with others, affecting knowledge of technology and known pool of isochrestic design alternatives (e.g., loss of a parent—craft teacher) Events affecting one's current contact & interaction with others, knowledge, beliefs, preferences, goals, strategies, message priorities
Physiological person	Regulating structures only indirectly pertain to material style	Motor skills	Personal physiology affecting motor coordination Neurophysiology & biochemistry affecting conscious and unconscious processes (e.g., phosphene-induced visions of shapes)	
Unexpressible personal conscious and unconscious aspects of the psyche (Jung, 1971; von Franz, 1964)	Conceptualization and classification of the physical world to control information load (Kroeber, 1948:329)	Novelty production: creative inspirations through mild trances while crafting; deeper altered states of consciousness—dreaming or induced trances "Rule creation behavior" Selective memory Projection Perception processes Other cognitive functions	Content of the personal unconscious: subliminal information, repressed thoughts, personal manifestations of the archetypes Content of the cultural unconscious: mythological themes & structures about the social order & cosmology; culture-specific manifestations of the archetypes Content of the collective unconscious: archetypes	Personal physical, emotional, & intellectually integrated experiences with outer world and inner world of psyche Events inducing altered states of consciousness (e.g., repetitive crafting, drumming, taking hallucinogens)

processes that they initiate. Regulating structures help the system to survive by controlling the timing, distribution, intensity, and/or other parameters of processes. This control is achieved by adjusting the constraints that define processes. In our water flow case, an example of a regulator would be a self-adjusting valve that changes the pipe's form (constraint) and, thus, flow pattern (process).

Now suppose that the material style of an artifact class is the thing to be explained. An example of a causal dynamic process would be information exchange through artifact production and use. Some relevant constraints would include known technologies, the social situation, artifact viewing distances, and the numbers of persons comprising the audience. Events that trigger the production and use of artifacts for information exchange might be any of a variety of ecological, social, or small-group events. Examples include short-term meteorological conditions that produce subsistence hazards requiring greater social cooperation and interaction; an argument between social groups; the intrusion of a new social group into the region; or a change in leadership. Finally, examples of structures that might evolve and regulate stylistic diversity and the process of information exchange would include the grammatical rules of the style, and social rules that govern the appropriate contexts of use of the artifact class (e.g., restriction to certain spaces or rituals). In turn, those rules might derive from political policy or basic religious or world view propositions, as part of the regulating structure (Rappaport 1979).

A complete and satisfactory explanation of a style involves all four of these logical types of factors and a clear discrimination of their roles. Aristotle (1966) and Flannery (1972:409) envisioned different parts of this framework in their essays on kinds of explanation and the components of an explanation (Table 1-2).

Table 1-1 provides some examples of processes, constraints, triggering events, and regulating structures that determine style at each phenomenological level. The table is simply a heuristic device. It does not attempt to enumerate all determining processes, constraints, and triggering events. Also, only those regulating structures that directly pertain to material style are listed. There are many other regulating structures that only indirectly or weakly affect material style and that are beyond the practical scope of stylistic studies (e.g., ecosystem regulators of population levels, biological regulators of human coordination). Finally, note that the events, constraints, and processes that relate to each other in determining material style can belong to different phenomenological levels. Constraints at

Table 1-2. Components of a Complete Explanation
and Archaeological Schools of Thought on Style

Component	Aristotle's terminology	Flannery's terminology	Schools of thought that emphasize this component
Processes	—	Processes	Selectionist Information exchange Social dialects Social interaction Enculturation aspects of isochrestic school
Constraints, contents	Material cause	Adaptive milieu (prime movers)	Technological aspects of isochrestic school
Triggers	Efficient cause	—	Historical-contextual archaeology (Hodder 1982a)
Regulating structures	Formal cause & efficient cause	—	Grammatical approaches High structuralist aspects of structural-symbolic archaeology (Hodder 1982b)

one level can define processes at another. For example, natural environmental constraints-conditions that affect the degree of contact between societies (ecosystem level) can define the information exchange process between societies (society level). Also, constraints at one level can determine constraints at another. For example, a pansociety belief (society level) might affect the nature of power relations among kin and the acceptability of creativity (intimate society level). In turn, both of these constraints would define the nature of the enculturation process (intimate society level).

Table 1-1 suggests that the "causes" of a style and the components of a satisfactory explanation of style are usually numerous, of several different logical types, and pertain to several phenomenological levels. The explanation of style is a complex logical task—much more complex than any previous, single archaeological theory of style has considered.

Table 1-1 also shows that different archaeological schools of thought on style emphasize different phenomenological levels and/or logical types of causal factors (see also Carr, Chapter 6: Table 6-2). For example, natural selection, cultural selection, information exchange, social dialectics, and decision-making processes pertain to different, sometimes overlapping ranges of phenomenological levels. Furthermore, whereas the schools that focus on these factors all evoke processes to explain style, historical-contextual approaches focus on constraints and triggering events, and grammatical approaches emphasize regulating structures.

Thus, different archaeological schools of thought on style vary from each other in different logical ways. Those that emphasize processes as causes, but that evoke processes of different phenomenological levels, differ *paradigmatically*. In contrast, processual schools differ from those that focus on context or structure in the *logical type* of causal factors that they evoke. In this way, some schools of thought on style are not comparable, logical alternatives and do not differ paradigmatically in the sense of Kuhn (1970). They are clearly complementary rather than competing, and can be integrated and used together to explain a style.

In sum, this book attempts to integrate the diverse approaches that are currently taken to the study of material style using several different strategies. These strategies include simple descriptions of the many factors that determine style, integration of high theories about style, integration of the factors that cause style within a single, middle-range theory, and philosophical systematizing of causal factors as to the logical explanatory types. Together, each of these strategies allows one to view and understand material style from a broader and more holistic perspective.

CONCLUSION

The analysis and interpretation of a style's origin, content, diversity, distribution, and transformation is a complex endeavor. Causal factors of several phenomenological levels, of several logical types, and that pertain to varying, current archaeological theories of style usually must be evoked. Ecological, technological, sociocultural, social-psychological, personal, psychological, physiological, and historical-contextual factors can all be relevant to explaining a style. In addition, it is usually insightful to study multiple media.

These diverse causal factors, and the current archaeological theories of style that pertain to them, can be integrated within more holistic explanatory frameworks at both the levels of high- and middle-range theory. At the level of high theory, the social interaction, information exchange, and social dialectics approaches can each, with translation, be subsumed, to some degree, as special cases under social psychological and selectionist theory. In turn, social-psychological and decision-making theoretic frameworks can be subsumed as aspects of selectionist theory. At the level of middle-range theory, different aspects of the formal variation of a population of artifacts, and different artifact classes within a material system, can be arranged hierarchically by explicit criteria and understood for the likelihood of their being determined by different kinds of factors of varying phenomenological levels and logical types. Thus, explication of a style requires multiple, complementary, integrated theoretical

approaches, in contrast to the single, supposedly competing theories of style, the relevance of which archaeologists have debated in recent years.

It is for the better that the student of style be a *whole anthropologist*, who understands and is capable of detecting the workings of a broad range of causal factors—social—psychological and psychological factors as well as technological, social, and ecological ones. Analysts will achieve richer interpretations of style if they are willing to cross disciplinary lines into biology, material science, cognitive and depth psychology, and art when studying a style. The advantage of such an expansive approach should be obvious. It reflects the complexity of the artisan as a human being, who is defined and lives at the portal between many levels of phenomena.

It is true that not all styles and archaeological records provide the quality of information that is necessary to reap fully the potential fruits offered by a more holistic approach. Nevertheless, an understanding of the workings of all potentially causal factors at all levels is required if one is reasonably to accomplish the fundamental tasks of evaluating which factors are more likely to be important in any particular case, and assigning appropriate interpretations to the various formal attributes of a population of artifacts or to the various artifact classes within a material system. A holistic understanding is also necessary if one is to conclude what cannot be said about those attributes or classes. To consider fewer causal factors, to operate within the agenda of a single paradigm, is to facilitate misinterpretation. Moreover, taking a single, paradigmatic view of material style can only restrict appreciation of the endeavors, lives, and beauty of the past peoples we study.

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Part II

High-Level Theory on the Causes of Style

The chapters in Part II address the question, What factors cause material style and formal variation? This question is answered in two ways. First, the chapters inventory the broad array of factors that can determine material styles. Second, they review the various theories that evoke these factors to explain material styles and to interpret archaeological records. Together, the chapters in Part II prepare the way for asking the middle-range theoretic question addressed in Part III, Which specific determinants of an artifact's form are reflected in which of its specific attributes and under what contexts?

Taking inventory and giving order to the many kinds of factors that can cause material style seems useful at this point in the history of archaeological studies of material style. The past fifteen years have witnessed the proliferation of ethnoarchaeological and archaeological documentation on the causes of material style, yet also some theoretical polarization and restriction as to the causes that are deemed "relevant," paradigmatically, for investigation (e.g. Wobst 1977; Hodder 1982; Wiessner 1983; Sackett 1985). Most theorizing about material style has focused on factors at the levels of the operative society, small groups, and the individual.

With a broader eye, the chapters in Part II discuss causal factors that pertain to a wide range of phenomenological levels, including the ecological, technological, sociocultural, social-psychological, personal behavioral, personal psychological, and depth-psychological levels. The factors also pertain to functional, structural, and historical theoretical approaches in anthropology, because they include dynamic processes, structural constraints, and adaptive milieu that define processes, events that trigger processes, and regulatory structures that adjust constraints.

Roe's chapter introduces this book's topic by defining the concept of style and some of its primary characteristics. According to Roe, a style is a component of a culture system, and as such, includes ideas, behaviors, and forms—both processes and products. This view of style is broader than that typically used in archaeology to refer to product alone, which is perhaps better termed "material style" (Carr, Chapter 6). For Roe, style involves a negotiation between the individual and society (see also Hodder 1990). Style resides in the choices selected repeatedly, in a largely normative manner, from known alternatives (see also Sackett 1982). A style is also based on the emotional compromise between the creative flight from boredom and the normative retreat from chaos. Roe observes that often a style is defined in hindsight or by outside analysis, rather than during its making by its makers. It is the denizen of a certain place and time. Finally, a style can be defined by only a corpus of items, not one. Extending this definition, Roe goes on to distinguish art from craft, and to discuss the difficulties in the dichotomy that some archaeologists (e.g., Binford 1965; Dunnell 1978) have drawn between stylistic and functional attributes.

Roe's chapter proceeds to describe numerous factors that cause material style, ranging from the ecological to the depth-psychological, and to provide ethnographic examples of them. Some of these

factors include: (1) the structure, grain, and accessibility of the physical–social environment; (2) the “tyranny” of the medium and technique; (3) social constraints on and aids to individual creativity, such as historical tradition, public opinion, the archiving or destroying of prototypes, domains where deviation is allowed, and artisan and group mobility; (4) many aspects of enculturation; (5) economic demand and the status of the artisan; (6) the collective unconscious of the culture, as expressed in mythic representations; and (7) panhuman unconscious structures such as binary opposition, triadic dualism, and dual triadic dualism. Importantly, Roe, following Lathrap (1973), envisions these processes as being hierarchically arranged into a series of levels, which he calls the psychological, formal, social, mythic, and structural. This framework lays a groundwork for middle-range theory building in Part III.

Voss and Young’s chapter focuses on the social-psychological process of self-definition that is intrinsically involved in the formation and use of a material style. Following an identity–interaction model of the self, Voss and Young characterize the self as having two components: (1) a “reactive” aspect that evaluates one’s thoughts, feelings, and behaviors from the perspective of other persons; and (2) a “proactive” aspect that plays social roles and portrays impressions. The authors then summarize the key premises of the social interaction, information exchange, and social-dialectics/structural schools of thought about style, as well as Wiessner’s (1984) social-psychological theory of style, and show how these frameworks implicitly assume the self to be either reactive or proactive in nature, but not both. Criticisms of each school by the archaeological profession are reviewed and shown to stem from the incomplete models of the self assumed by each school.

By presenting a more complete model of the self, Voss and Young provide a common ground for integrating the different schools of thought about style. Specifically, they clarify that self-evaluation is an aspect of enculturation, which the social interaction theory posits as determining style. Also, impression management is clarified to be an aspect of social communication and social strategies, which the information exchange and social-dialectics/structural schools respectively see as determining style. Thus, the different processes that are evoked to explain style by the three schools are shown to be aspects of the greater process of re-creation of the self through material style, and the three schools can be integrated within one general framework.

Such integration of the three schools of thought is not possible with a similar social-psychological model offered by Wiessner (1984). Wiessner discusses only a single social-psychological process, termed “identification by comparison.” This process emphasizes impression management by the proactive self. Wiessner’s social-psychological model is thus more closely aligned with the information exchange and social-dialectics/structural schools of thought.

At the same time, Wiessner’s work complements Voss and Young’s in that it shows how the nature of a social situation (e.g., fear, competition, cooperation, affluence) determines which aspect(s) of the self is relevant for comparison and, thus, expressed behaviorally and stylistically. The aspects of the self that Wiessner discusses include the personal and social selves, generally, as well as more particular identities.

Voss and Young’s chapter makes three other essential contributions. First, it introduces archaeologists to Hsu’s (1985) model of the self. This model distinguishes seven phenomenological levels, each having distinct processes that can affect material styles: the unconscious, preconscious, unexpressible conscious, expressible conscious, intimate society, operative society, wider society, and the outer world. Hsu’s model is used by Carr and Neitzel (Chapter 1) and Carr (Chapters 6 and 7) to inventory and hierarchically order the various processes that can determine material style.

Second, Voss and Young build some middle-range theoretic arguments that relate the level of visibility and form of spatial distribution of the material attributes of artifacts to various causal processes. These relationships can be drawn because attribute visibility and spatial distribution pertain directly to the two components of the self: the individual as a communicating actor and the individual as a self-evaluating member of the social group, respectively. As statements of pattern generation rather than simply correlation between patterns and processes, the relationships drawn are a strong form of middle-range theory (Conkey 1990:9–10).

Third, Voss and Young's chapter emphasizes how an understanding of the nature of the self implies the necessity of including decision-making processes in any encompassing approach to style. The authors point out that the individual, being positioned at the intersection of cultural tradition and context, must mediate through decisions (including stylistic ones) various cultural demands, immediate social situations, and personal motives and desires. That mediation is accomplished, in part, through the self. Voss and Young's emphasis upon decision-making processes in stylistic theory reiterates Sackett's (1985), and is extended to a more operational level by Carr (Chapter 7) through the concepts of "message priorities" and the "decision hierarchy." Voss and Young's view contrasts with Braun's (Chapter 5), as discussed below.

Washburn's and Braun's chapters expand our view of style from its social and social-psychological causes, which have been the focus of most recent archaeological studies of style, to both lower- and higher-order causes: perception and selection, respectively. Washburn's chapter has three purposes. First, it offers and gives evidence for a model of the perception process. The model posits that mental images of objects are descriptions of relationships among their features rather than iconic pictures. In the face of continual visual overload, the perceptual process by which mental images are formed, recognized, and classified necessarily involves the selection of only certain essential relationships.

Second, Washburn's chapter links the perception process to the creation and maintenance of the styles produced by social groups. Washburn argues that the relationships that are selected in the perception of objects tend to be consistent within a social group and can vary among social groups. In turn, these characteristically selected relationships are expressed in the production of two-dimensional works of art, creating art styles that are distinguished by their structure. For example, modern Western art commonly captures three-dimensionality in two dimensions using the projective transformations of perspective, whereas non-Western art often uses metric, affine, and/or other kinds of transformations. Thus, structural styles reflect social groups of one scale or another. In Washburn's analytic experience, the social group is typically the culture or ethnic group.

Third, Washburn's chapter reviews a mathematical system for describing the universal, basic, formal properties of nonrepresentational and representational planar art. The properties considered include line, color, texture, orientation, and especially symmetry patterns. Washburn also summarizes recent developments in the nomenclature for describing these properties. By focusing on basic properties that occur in all media, the system has the advantage of allowing descriptions of styles in varying media to be made and compared.

Washburn's chapter, appropriately, does not attempt to address the issue of why members of a social group tend to perceive consistently or why the mode of perception of a group commonly remains stable over time. These questions relate to processes of other phenomenological levels: specifically, the small-group, social-psychological dynamics described by Voss and Young (Chapter 3); historicity and selection described by Braun (Chapter 5); and perhaps processes of the collective, cultural unconscious mind (see Carr and Neitzel, Chapter 14). Also, Washburn's chapter introduces but does not resolve the debate between herself and Hodder (1982:206; 1986:47–48) as to whether the structural styles of social groups are passive and normative, or are used actively, or may be either. Again, this question cannot be answered relative to the nature of perception, itself; it is a middle-range theoretic and contextual issue.

A possible resolution to Washburn's and Hodder's debate is given later, in Chapter 7 by Carr. Here, it is suggested and some evidence is cited that a symmetry pattern can reflect a wide range of processes and constraints, and can indicate social groups of any of a variety of scales, depending on the visibility and communication potential of the particular pattern. In turn, the visibility of a symmetry pattern depends on the level of design to which it applies, its complexity and comprehensibility, and the visibility of the artifact class. Complex symmetry patterns, like the grammatical rules of a style, are stylistic "nuances" (Friedrich 1970), which one would expect to be good indicators of either passive or active social interaction. Complex symmetry patterns might reflect passive, learned norms within a network of artisans, or active interaction (e.g., intermarriage, artifact exchange) among small social groups. Simpler, more visible symmetry patterns might actively and directly symbolize differences

between societies or other social units. This flexible view of the processes that a symmetry pattern can reflect mediates Washburn's and Hodder's positions. However, it can be difficult to apply in certain cases, where the same symmetry pattern is found in multiple design levels of an artifact class (Washburn, personal communication) and thus has multiple degrees of visibility.

Braun's chapter shifts our attention from the broad array of factors, of varying spatial and temporal scales, that may determine a style and stylistic variation to the causes of specifically long-term, transgenerational stability and change in the statistical popularity of alternative styles. The causes he isolates are natural and cultural selection. Braun assumes a neo-Darwinian selectionist perspective from contemporary evolutionary biology (Gould 1982; Sober 1984) and translates relevant theoretical concepts from the biological realm to the human behavioral realm. Variation, continuity, and change in stylistic and all other cultural practices are seen to be the consequence of three factors: (1) the innovation of practices; (2) their transmission by cultural means; and (3) cultural and natural selection of practices. For Braun, natural and cultural selection arise from the specific "effects" (i.e., consequences) that stylistic and other cultural practices have—absolutely and relative to the effects of other practices—and the implications of those effects for the differential transmission and perpetuation of the practices. Braun asks, "What is it about the practices, themselves, that shape their statistical popularity?"

Braun contrasts his view with that of Hill (1985), who attributes cultural selection to human decision making and intention. For Braun, intention and decisions are aspects of innovation rather than selection; they are the source of only the "outpouring" of trial-and-error, alternative practices, which are then subject to selection. Although Braun would prefer to leave the human being and human decision making out of an explanation of transgenerational stylistic change, from other viewpoints, there does seem to be room for both Hill's and Braun's ideas in a full treatment of the selectionist perspective (see Carr and Neitzel, Chapter 14).

In developing his selectionist perspective, Braun makes two additional contributions. First, he emphasizes that a selectionist explanation of style is, in part, historical in nature. At any given time, the pool of alternative cultural and stylistic practices that is available to a society and that is subject to selection results from that society's history of innovations, contacts with other societies, and previous episodes of selection. Or, in Hill's (1985) framework, the current set of alternative social and stylistic practices for choice are defined and constrained by past choices. This historical character to selection is summarized by the phrase "descent with modification," and the term "historicity."

Second, Braun reviews and translates the social interaction, information exchange, and social-dialectical/structural theories of style in terms of selectionist concepts. The translation reveals a meeting ground for all three frameworks. Braun notes that it is the actual effects of stylistic practices, not their intended effects (e.g., communicating messages, guiding social action), that lead to selection for or against the perpetuation of those practices. Also, both isochrestic and iconographic variation, which are the subjects of the three theories, can have social and other effects. Thus, both kinds of formal variation and the theoretical frameworks that address them can be accommodated within selectionist theory, in spite of differences in the degree or kind of intent that the theories assume stylistic practices to reflect.

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Chapter 2

Style, Society, Myth, and Structure

PETER G. ROE

It's fun to do things you're not made to do, like going to the moon or living under the ocean. I was playing when I invented the aqualung. I'm still playing. I think play is the most serious thing in the world.

JACQUES YVES COUSTEAU

This paper inventories and illustrates the great range of cultural factors that constrain aesthetic and technical styles. It also offers some comments on the nature of style itself. The paper is organized broadly into three parts: (1) a definition of style and a discussion of its hierarchical nature; (2) a listing of the multiple social and technological variables that condition stylistic output; and (3) an analysis of the ideational factors that articulate style with self and society on the mythic and structural levels.

A MULTIDISCIPLINARY PERSPECTIVE ON STYLE

I write about style as an archaeologist, ethnologist, and artist. My work has encompassed tribal-through state-level societies ranging over four geographically remote and ecologically diverse, but culturally connected, regions of South America and the Caribbean: the Peruvian *montaña*, the highlands and coast of Peru, the Guianan highlands, and the Greater Antilles. I have studied a wide selection of media within both living and dead cultures. These include myth, song, ethnoastronomy, ethnotaxonomy, ritual, ceremony, body art, settlement and space, textiles, ceramics, basketry, wood carving, lithic artifacts, rock art, sculpture, and architecture.

Archaeology, ethnology, and art each provide contrasting and complementary perspectives on style, with advantages and disadvantages. Archaeology looks at style in "closed," or extinct, "archaeographic" complexes bounded by the finite material output of dead producers. Archaeology shows the clearer general structure of a smaller sample. Preservation biases filter out much variation, and in the process, highlight a style's underlying principles and major subdivisions. By providing chronology, archaeology also resolves stylistic processes over time as cycles of fashion. These cycles can occur

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within traditions defined by local continuity, among horizons constituted by rapid interregional similarities, and across series comprised by a “sloping horizon” of slow, interareal movement. Even the anonymity of dead informants, to the extent that they are recognized as individuals (Gunn 1977), masks the particularizing effects of engaged and often conflicted live persons, thereby emphasizing the general processes that enmesh them.

Archaeological “individuals” form a deceptively homogeneous and passive mass of actors subject to external pressures. Archaeology also fosters a passive view of the artifact. It is easy to take the object as a “given,” rather than as an alternative component in the creative process.

In contrast, ethnology studies “open” ethnographic complexes created by living artists and artisans. Ethnology provides depth and complexity via interactive questioning and observation. It also integrates elements from diverse domains that don’t “fossilize,” such as song, myth, and rite. Thus, it emphasizes creativity and cultural wholes. For this reason, the ethnographic perspective is less likely to become media-locked in its definitions of style. In contrast, archaeology often focuses on one medium to the exclusion of others; for example, “only ceramics form styles” whereas lithic artifacts yield “complexes” (Gallagher 1976:2). Yet it is precisely the structural similarities that appear across media that give cultures their uniqueness and harmony.

Nevertheless, the straitjacket of the “ethnographic present,” where the origins of styles are lost in an ahistorical fog, is just as limiting as its archaeological counterpart, preservational bias. Whereas, the latter leads to materialist reductionism, the former produces the Redfieldian myth of the unchanging native. Both pitfalls can be avoided by combining the fine-grained synchronic detail of ethnography with the broad diachronic outlines of archaeography where historical continuity permits.

Last, by combining the role of artist with either archaeology or ethnology, the researcher can circumvent any limited informant corpus by producing novel solutions him- or herself. Hands-on experimentation with the informant’s medium can lead to a detailed and kinesthetic appreciation of a style. “Doing style” emphasizes *process* over *end-product*, and reveals it to be a “dialog” between the producer’s intent and the medium’s inherent perfectable qualities (Link 1975:52) within specific, social performative–presentational contexts.

A PARADIGMATIC PERSPECTIVE ON STYLE

This paper combines two approaches to style: (1) a “Boasian” (1955 [1927]) framework of the properties of media and their feedback relationship with style, and (2) a “Lévi-Straussian” (1967) perspective of style as a system of normative codes as viewed from an “emic,” or internal, processual perspective. I do not suggest that stylistic analysis should be only emic–contextual, rather than “etic.” Instead, I advocate combining both at different stages in a sequence of investigation. Indeed, upon leaving the field or finishing a laboratory analysis, one translates emic understanding into operationalized and parsimonious “etic” models for academic discourse.

Style can be analyzed as an aspect of culture, which is a system of ideas that underlies the behavior of individuals in society. Culture and style in this ideational sense arise out of a feedback process between individuals; their cognitive structures, drives, and senses; and the learned environment, which encompasses physical, biotic, and socially significant components. Culture and style do not emanate upward from the individual, nor trickle down from some reified superorganic, but instead are negotiated realities, simultaneously *process* and *product*. Individual intent interacts with the properties of raw materials, knowledge of craft processes, and the social context (Figure 2-1).

To qualify this perspective, there is no way of knowing “what is going on in the informant’s head,” whether that informant is living or dead. No two people in the same culture or subculture who use similar styles share any ideas; they don’t share anything. Rather, via interaction and a desire to communicate, they have each evolved notions, and behaviors based on them, that are roughly similar but not identical in form. How similar is similar? Close enough to be understood. Competence in a

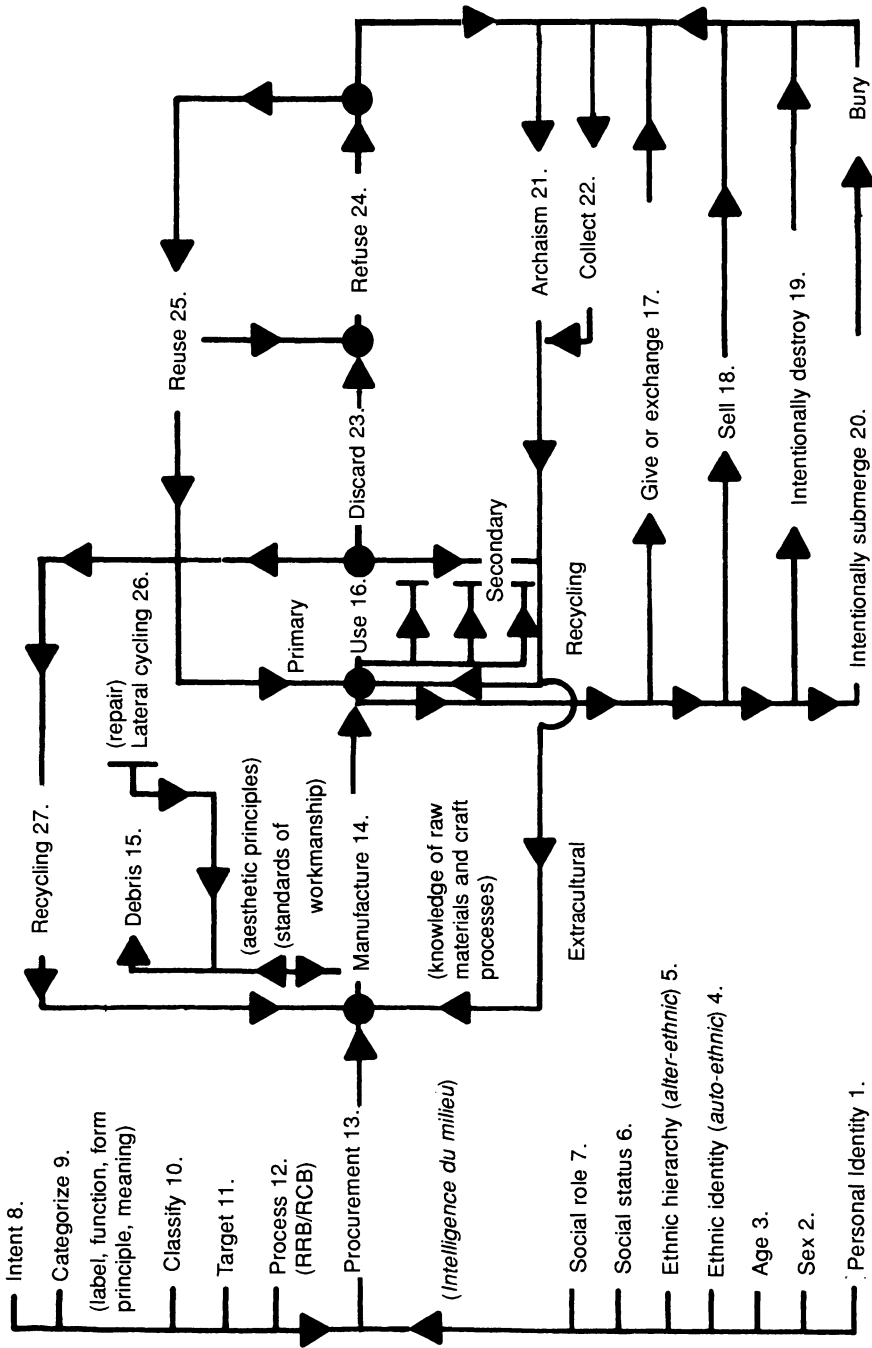


Figure 2-1. A flow chart of the major variables of style and their processual placement, expanded from Schiffer (1972) and DeBoer and Lathrap (1979).

culture or its style can lead to elegant solutions (Figure 2-2a); lack of it produces “gibberish” in art style (Figure 2-2b). Before one can communicate *about* someone, one must communicate *with* them.

Moreover, there is a correspondence between levels of stylistic variation and levels of linguistic and cultural patterns (Table 2-1). Previous definitions of “style” have emphasized one or several of its levels, but not all. Each distinct but interrelated level of style has its own questions, methods, goals, and investigators (Roe, 1989a; Carr, Chapter 7; Pryor and Carr, Chapter 8). Consequently, there is no *one correct way* to view and study style. I will consider a hierarchical strategy for analyzing style below.

A DEFINITION OF STYLE

In this section, I will address three related questions: What are the defining aspects of style? How do art and craft differ in style? Can style be distinguished from function?

The Defining Elements of Style

The concept of style can be defined by a number of properties. First is its identifiable distinctiveness or *recognizability*. “Not all traits of a work of art are stylistic traits, but only those which serve to identify it as an example of a style” (Munro 1963:256). The “visibility” of these traits, how they “stand out” from all others, is itself often the product of hindsight, or outside analysis. Artists caught up in the moment of a style’s evolution (i.e., a “fashion”) are unaware that they are members and innovators within a broader style. To quote the popular composer/performer Peter Townshend, “(f)ashion, in a sense, is description of events after the fact.” Style trait recognition is also easier from an observer’s view, not the artist’s *emic* position (Kosinski 1965:10).

Which traits are stylistic and which are not has hinged, since the days of Boas (1955[1927]) and Veblen (1953[1899]), on a second element, *virtuosity*. This gauges the effort, the “instinct of workmanship,” invested in something. If more time is spent on these traits than is necessary to satisfy utilitarian imperatives, they are stylistic features (Jones 1973:266–267). This is also Maquet’s (1971) classic definition of style as “non-instrumental form.” It is useful in its simplicity, if ethnocentrically naïve in its culture-free, static dualistic opposition between function and style (Sackett 1977:370).

This view also oversimplifies the vehicle of behavior, the artifact. It ignores the third element, the properties of materials and how they may modify the artist’s intent (stylistic prejudices) through his or her knowledge of craft processes. Style is both a “means of expression” and “a means to expression.” It is a *medium-dependent* process, although it may structure different media in similar ways. Style requires a vehicle, even if that vehicle is a somatic “aid.”

Style’s fourth element is its recognizability as the unique product of a given set of people, the denizens of a certain place and time. Thus, style is a *contextual*, “non-generalizing” phenomenon (Hodder 1986:3–6), albeit more on the level of form than process. It is *historical* in that the choices being made are always circumscribed by the choices made in the past (Fraser 1962:27; Braun, Chapter 5). Not all things are simultaneously possible in style. Historicity gives style its affective content, its powers of emotional evocation of a group’s past.

Style’s fifth element is its *systemic selection* from *known alternatives* (Lemonnier 1986:161; Braun, Chapter 5). This occurs on the levels of the basic design elements, the rules of their recombination and creation, and the minimally meaningful design compounds or “motifs” that their manipulation produces. Style resides in *choices* “made to produce a certain effect” (Deetz 1965:46). Therefore, it is defined by the existence of “discontinuities” (Lemonnier 1986:159) or *variability* (Miller 1985:12) in a series of traits. These may not be geographically coterminous in their distributions. Either within a given corpus, or between corpi, certain traits are “variant,” others are “invariant” (Lemonnier 1986:158–159).

Those views influenced by Saussurian linguistic “competence” models, which describe the sub-conscious knowledge behind variable “performance,” speak of these choices as “options” (Kensinger

1975:80). Options occur within the context of “decision programs” (Link 1975:46) based on emic intent and knowledge. Thus the fifth element in the definition of style is the factor that initiates the whole process, the *intent* (Deetz 1965:46) or “will” (Lemonnier 1986:174) of the artisan. Stylistic behavior implies intentional goals. (For a qualifying view, see Braun, Chapter 5.)

Style’s sixth element is the *normative* nature of these intended decisions: the expectations of the artist and his or her target audience (Gombrich 1979:352). Through interaction, these normative choices will be “standardized” (Bunzel 1972 [1929]:1) in a “recurrent way of structuring and presenting” (Mills 1971:72) form or process.

It is precisely because style is a normative process that operationally similar decisions are repeatedly made, by the same actor at a different time or by different actors at the same time. Thus one needs the seventh element, a *corpus*, to define a style. Unique, singular behavior or artifacts cannot possess style.

The eighth element of style is *affect*, or in Mills’s (1971) phrase, “qualitative experience.” Even dealing with technical, effective style rather than aesthetic, affective style, one cannot dismiss emotional bases for making stylistic choices. This compromise between instrumental functionality and pleasing shape, which are embodied in an artifact, is “design.” Choices oscillate between two poles in human behavior. First is the flight from boredom represented by the “aesthetic imperative”: the drive to inject novelty into prosaic existence by converting nonart domains into art in order to maintain the interest of the producer, audience, and/or consumer. Second is the retreat from chaos: the seductiveness of routinized decisions embodied in cultural norms. The individual walks this thin wire between creativity and tradition, which stretches between all levels of the hierarchy of style.

Based on these elements, *style is an intentional, structured system of selecting certain dimensions of form, process or principle, function, significance, and affect from among known, alternate possibilities to create pleasing variability within a behavioral–artifactual corpus*. Style is both the process of creating information through differentiation (Miller 1985:36) so that it is recognizably evocative of a specific cultural context, and a way of circumscribing choice via the imposition of a frame within which creation or recombination occurs.

Style in Craft and Art

How then does style differ between craft and art? An art–craft continuum (Roe 1976:80) emerges out of the processual viewpoint in material culture (Link 1975:8, 17–18; Miller 1985:35; Lemonnier 1986:149) and craft literature (Krenov 1976:8). It is complemented by archaeology’s recent emphasis on the taphonomy of artifacts (Schiffer 1972), their fabrication steps (Goodwin and Thall 1983; Miller 1985), their componential–modal analysis (Rouse 1939; Raymond, DeBoer, and Roe 1975) and their generative grammatical paraphrases (Müller 1980; Roe 1980).

The processual view begins with the decomposition of the artifact into its variable attribute clusters or “modes” along any dimension of form or fabrication. Then one traces the realization of those parts in manufacture (Figure 2-3), starting from initial intent, proceeding through raw materials procurement, and encompassing the stages and standards of workmanship. These analytical devices for artifact generation are called “decision pathways” (Link 1975:8), operational sequences, *chaîne opératoire* (Lemonnier 1986:149), tree diagrams for generating variability (Miller 1985:37–39), or routing diagrams. They specify the differences between two unique solutions within the same or historically cognate styles (e.g., columns in Figure 2-3a, b), allowing the art–craft distinction to be defined operationally. If the rules and elements are simply fulfilled in a stereotyped way, the same modes being chosen on identical dimensions in the same sequence, these actions are “Rule Replication Behavior” (RRB) (Figure 2-3a). This closed decision program is a necessary response to the design optimization of form toward a particular technical function. It is the conservatism of a successful solution, a “Romer’s Rule” of artifacts: Affect *and* effect guiding intent yield craft.

Contrast this with the constant flux of fashion in art. “Repetition in art is nothing” (Santayana 1988) because it is a species of play (Huizinga 1950). In recombining the old elements and rules, or



Figure 2-2. “Grammatical” and “nongrammatical” statements in an art style. Above: A portrait of a Pisquibo woman with elegant, traditional, rectilinear, geometric face paint (photo courtesy of Roberta Campos). Opposite: The *mestizo* executed version of quasi-Shipibo designs (*quêne*) on the facade of the Hotel Tariri in Pucallpa—a complete misunderstanding of the art style and its symmetrical tripartite structure.



Figure 2-2. (Continued)

Table 2-1. Parallels in Language and Style

Style	Ethnological	Linguistic	Archaeological
Personal style	A person's "culturolect"	A person's idelect	The analytical individual (Gunn 1977:168)
Substyle	A subculture	A special "jargon"	An assemblage or site component
Ethnic style	An ethnic group (a culture)	A dialect	A focus (1 site = 1 culture)
Regional style	A "people" (Rouse 1986:159)	A language group	A cultural complex (Chanlatte 1979:59)
Spatial-temporal framework	The cultural matrix (Tello 1960:13)	A language family	A tradition, horizon, or series (Wiley 1971:3; Rowe 1967:72; Rouse 1986:10)

creating new ones via an open decision program, one engages in "Rule Creation Behavior" (RCB) (Figure 2-3b). This is not "technique," but "technic" (Munro 1963)—the psychosocial manipulation of self and others in art.

This distinction between art and craft segregates the poles of a continuum, since invariably RRB systems "evolve" into RCB as they are propelled by a decreasing "threshold of boredom" (i.e., the transition from "work" to "play" to "game"). RCB also tends to "devolve" into RRB via the terrors of too much freedom, the psychic cost of too many decisions, or the profit-and-loss decisions of the external "curio" market.

Style and "Functionality"

If this is what "style" is, what does it do? Function and style have often been defined as antithetical concepts. For example, materialists like Dunnell (1978), drawing upon the framework of the German technologist Semper, via Boas (1955 [1927]), find style useless. Functional attributes are those relevant to evolution and selection; the residuum is style. Similarly, Binford (1962) defines style as whatever attribute is left over after all technofunctional or "technomic" parameters are subtracted. This austere and limited archaeological viewpoint, which even seeks to excise "style" from the pre-historian's vocabulary (Conklin and Moseley 1988:145), was in part encouraged and honed through the study of small-scale hunter-gatherers whose simplified material culture served as dubious ethnographic models. It flounders on six contradictions.

First, it incorporates hidden romantic notions about the ideal functional nature of the traditional technologies of nonliterate and peasant peoples. It presumes that forms are the "best" solution given local raw materials and craft knowledge, i.e., that their designs have been rationally "optimized" for their function. This view also assumes that there is only one "correct" solution. However, modern evidence has shown that many traditional forms are nonoptimal in *physical* function (Miller 1985:52–56).

The second difficulty is that functionality, defined largely in its physical–energetic or subsistence aspect, is a culture-bound concept. This is especially true when social goals or magical world views are considered. A "fetish" figure may be a pure functional form to those who carve or employ it; it is doing "work" in their "real" (our "illusory") world of the mind.

Third, the positivist position that a purely "etic" or objective assessment of function should eventually be possible, independent of the "misled" emic view of the benighted native, is now vitiated by the perspectives of both the history of technology and style in technology. History reveals that play with multiple alternatives precedes the supposedly "optimal" designs of later material culture (Ferguson 1977). The "hidden pattern behind multimedia," or the "style in technology" movement in anthropology, comes to similar conclusions. It postulates deep structural, unconscious, yet basic and pervasive "central cultural metaphors" (Armstrong 1971) that similarly structure stylistic output, both

behavior and artifacts, across diverse media (Ardalan and Bakhtiar 1973; Azarpay 1987). These metaphors aid in selecting the very technology that exploits the environment itself (Rivière 1969; Leone 1977).

Not only artifacts, but also the techniques that yield them, are stylistic expressions (Lechtman 1984). Techniques that differ radically in concept and execution can produce similar results. If many alternate techniques produce equally functional artifacts, one must ask why the one that is used has been chosen. Again, some of the “functions” of an artifact, even the most utilitarian, may be the nonmaterial social, mythical, or cosmological referents of its production.

The fourth difficulty with archaeological assumptions about the style–function dichotomy is that they run head-on into a wealth of ethnographic data on the ethnoaesthetics of the very people who make the artifacts that archaeologists eventually study. Ethnographic evidence shows that far from being “conceptually decoupled” from function, decoration is an integral part of the artifact. This is why in many cultures there is frequently no term for “beauty” (a product of the modern “Art Ghetto”), or even “art/artist” (Whitten and Whitten 1988:10). Instead, there are many words meaning “correct” or “real,” that is, “proper” or “complete,” because decorated objects embody skill, knowledge, and insight. By “complete,” informants mean that the artifact/action bears ornament (Dawson 1975:132) as well as the mark of correct technical execution. As one Mehinaku artisan said, “‘(n)ow it is a real pot’ . . . after painting the bottom of a tub for processing manioc flour” (Gregor 1977:35). So strong is this “aesthetic imperative” that it is irrelevant if the designs will last or be visible. Nor does it matter if the artifact that the design graces is aesthetic or technical in intent (Gregor 1977:38). If mundane artifacts have to be “completed” through the addition of decoration, even more so must ceremonial artifacts carry the “burden” of design (Dawson 1975:131). This is especially the case when it comes to weapons, there being “a feeling that one cannot use an undecorated club to kill an enemy” (Dawson 1975:131)!

The fifth objection derives from a failure to distinguish “intrinsic” from “conventional” functionality when material cultural and ethnoarchaeological studies demonstrate that native artifacts are often highly “dysfunctional” (Miller 1985:74). The intrinsic functionality of an artifact is an “etic” notion, based on Western cultural notions of human engineering and energetic cost-effectiveness. It may not correlate very well with an artifact’s use or spatial distribution within a culture (Miller 1985:60). In contrast, conventional functionality does correlate (Miller 1985:67). This is function by fiat, by cultural assignment; this X is meant to do Y, only loosely guided by the artifact’s inherent properties.

The last reason why “style” and “function” form a false dichotomy is that there are specific functions to style beyond form or process. Many functions maintain segmentary boundaries between societies, as well as the exchange of information within and between them (Wobst, 1977; Wiessner 1983; Voss and Young, Chapter 3).

There seems to be no conclusion to this debate about what constitutes style versus function—an indication that the division is artificial. It depends on whether an etic or an emic view is used and it is even elusive from an etic perspective. This suggests that analysts need not worry about trying to segregate style and function in any way. The appropriate classification of attributes as stylistic or functional depends on the behavioral process being analyzed. Further, analysis should begin with *all formal variation* (Carr, Chapter 6), not a priori definitions of certain attributes as “stylistic” or “functional” because they articulate with other notions such as evolution or selection (Dunnell 1978). Instead, distinctions must be relevant to the behavior under scrutiny.

A MODEL FOR ANALYZING STYLE

Earlier, I posed that style is a hierarchical phenomenon (Figure 2-1) and, consequently, cannot be studied with one method. To accommodate this situation, I propose a five-tiered model for analyzing style, where each approach forms a complementary level within a holistic analysis. This multidimensional view resolves many “two-dimensional” debates. However, it requires explicit categories and classifications, care to distinguish the full range of stylistic variables that occur, and the *boundary*

RRB

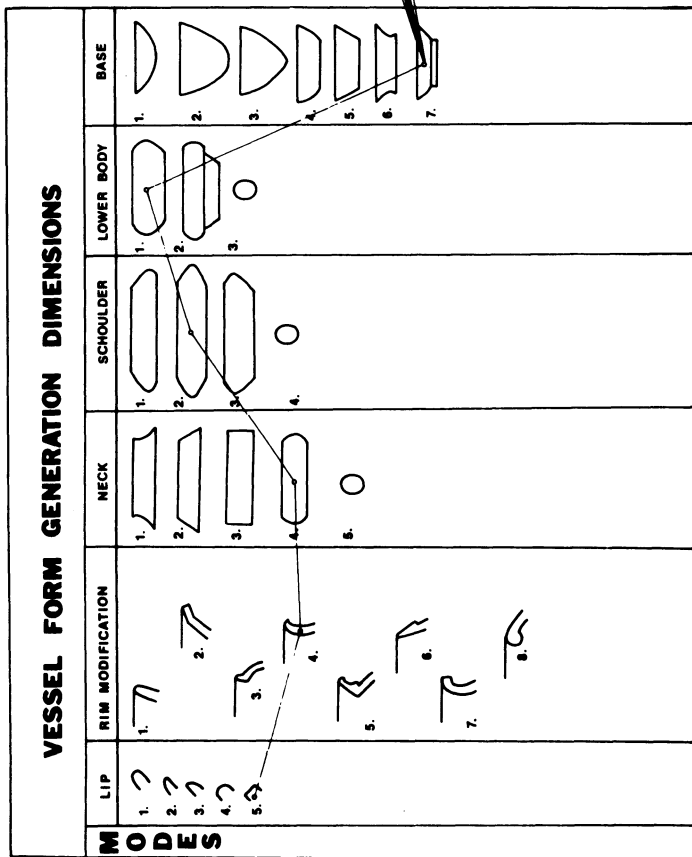
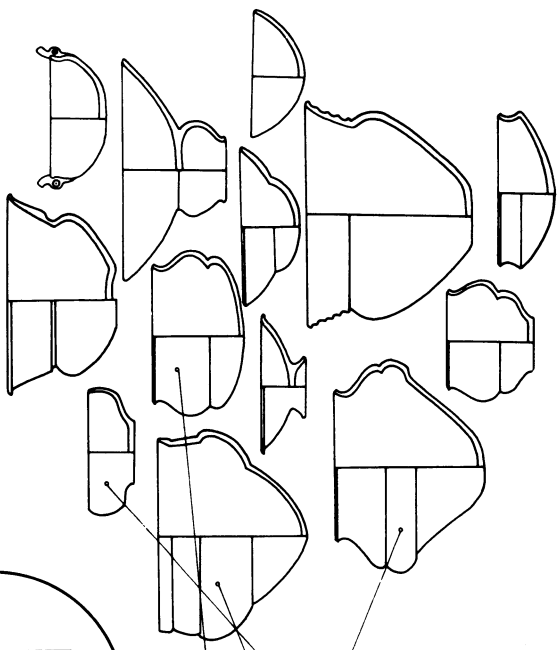
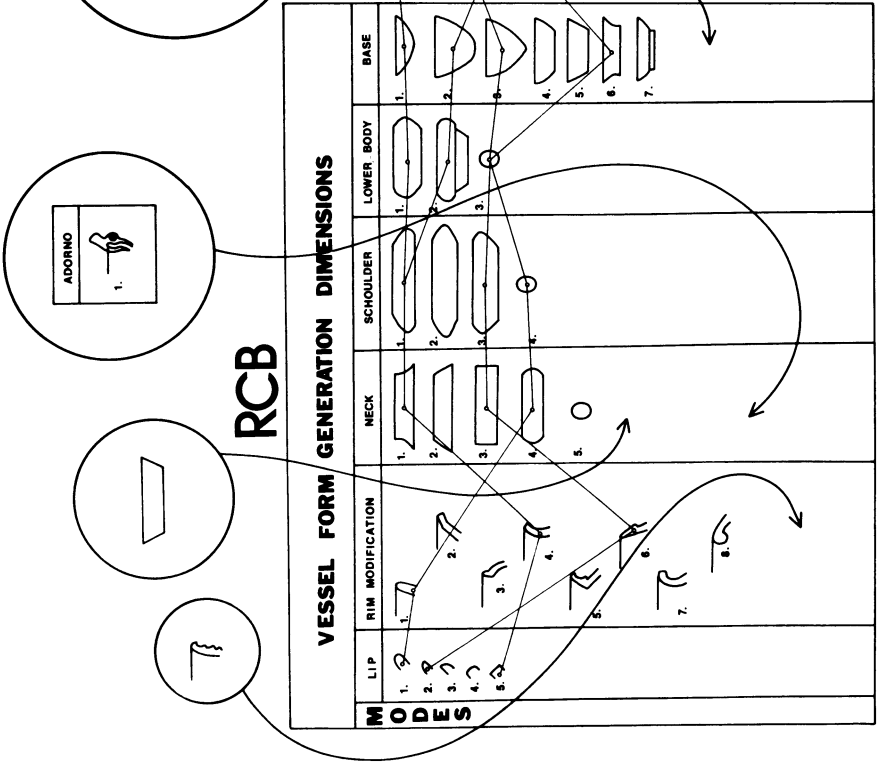


Figure 2-3. Paired flow charts of stereotyping and innovation in an ancient ceramic complex, the Cumancaya Phase of the Cumancaya Tradition (adapted from Raymond, DeBoer, and Roe 1975). This page: Rule Replication Behavior (RRB), or the multiple realization of a given "mental template" or "prototype," in this case in a big globular Cumancaya bowl with incision and zoned slip-painting, 9th century A.D., Peruvian *montaña*. Opposite: Rule Creation Behavior (RCB) in the generation of a varied set of Cumancaya Phase fine and utilitarian ware vessel-form categories, including innovation in (from left to right) new modes along the rim modification and neck body segment dimensions or the creation of whole new dimensions (adornos = lugs) or subdimensions (annular bases within the base dimension). "O" marks the null options in every dimension.



conditions under which they apply. Expanding upon Lathrap (1973:94–95), the five levels are as follows. (1) The *psychological level* concerns the individual creator/artist/artisan and perceiver/audience (Washburn, Chapter 4). (2) The *formal level* considers how the elements and rules of style are put together and function from the producer/analyst's view (Washburn, Chapter 4). (3) The *social level* of style deals with how artists and their publics interact and how artists' intentions are conditioned by their social structure (Voss and Young, Chapter 3; Braun, Chapter 5). (4) The *mythic level* focuses on the conscious *messages* that confer meaning on a style's components of form (motifs) and the syntax of their arrangement. (5) The *structural level* considers the unconscious cross-media, metaphoric *information* that links all aspects of style and gives traditional cultures their sense of harmony via redundant coding in multiple media—what Lévi-Strauss (1967:227) calls the “logic of the concrete.”

I will not discuss the psychological level of style since it is considered at length by Washburn (Chapter 4) and Rosenthal (Chapter 10). The remainder of this paper addresses the formal through structural levels of style.

THE FORMAL LEVEL OF STYLE AND METHODS FOR INVESTIGATING IT

There are a number of analytic methods for resolving form, function, and decoration contrasts in any assemblage. From the *artist's point of view*, the *ethnoscience* approach, also called the prototype, fuzzy set, or topographic map approaches, capitalizes on recent advances in semantics. These have been applied to material culture by Kempton (1981) in an ethnographic setting and Vescelius (1980) in an archaeological context. They derive from fuzzy set theory in mathematics. This prototype and extension model dissolves each “type,” such as vessel shape, into a matrix composed of a series of slightly different shape and size classes. In the case of vessels, these might vary by the ratio of their height to width. This is then used as a projective test analogue. Informants confronted with the many cells of slightly varying vessel shapes are asked to draw a line around similar vessels—profiles that they would include within the same vessel form category and/or call by the same name. Since these variant forms approximate the “ideal” in various ways, the lines that the informants draw are their extensions from the named prototype. “Topographic” maps, which are derived from the quantification of many such informant choices, give the investigator the semantic range of what the type means. They also allow one to see how classificatory systems respond to and condition social change, such as the rural-to-urban shift (Kempton 1981:141).

The “modal analytical framework” also analyzes the main components of form. Both approaches are forms of “componential analysis” (Roe 1974:Figure 10). Because these components, here “motifs,” articulate to form wholes, the componential view approximates that of the *insider*. These wholes have considerable psychological reality for the people manipulating the style and have putative functions (the labeling aspect of function, cf. Miller 1985:67).

A complementary approach, *which takes the viewer's point of view* and is also a linguistic analogue, is the *grammatical* method with its goal of intelligibility (Roe 1980, 1983). This method produces “simulations” based on rules of which the artist might not be aware (Figure 2-4a,b) but, like linguistic rules, condition output. What generative grammatical analysis lacks in psychological reality, it makes up for in the reduction of variability within the study corpus and the productivity of its retrodictive (explanatory) and predictive power. However, all formalisms are heuristic, their forms to be judged solely on their parsimony and power in pursuing more complex and ambiguous social questions.

THE SOCIAL AND CULTURAL CONTEXT OF STYLE

There are a myriad of factors that affect stylistic production. Analytically, but not in actuality, these factors comprise the individual (Table 2-2) and social/contextual (Table 2-3) levels. These tables

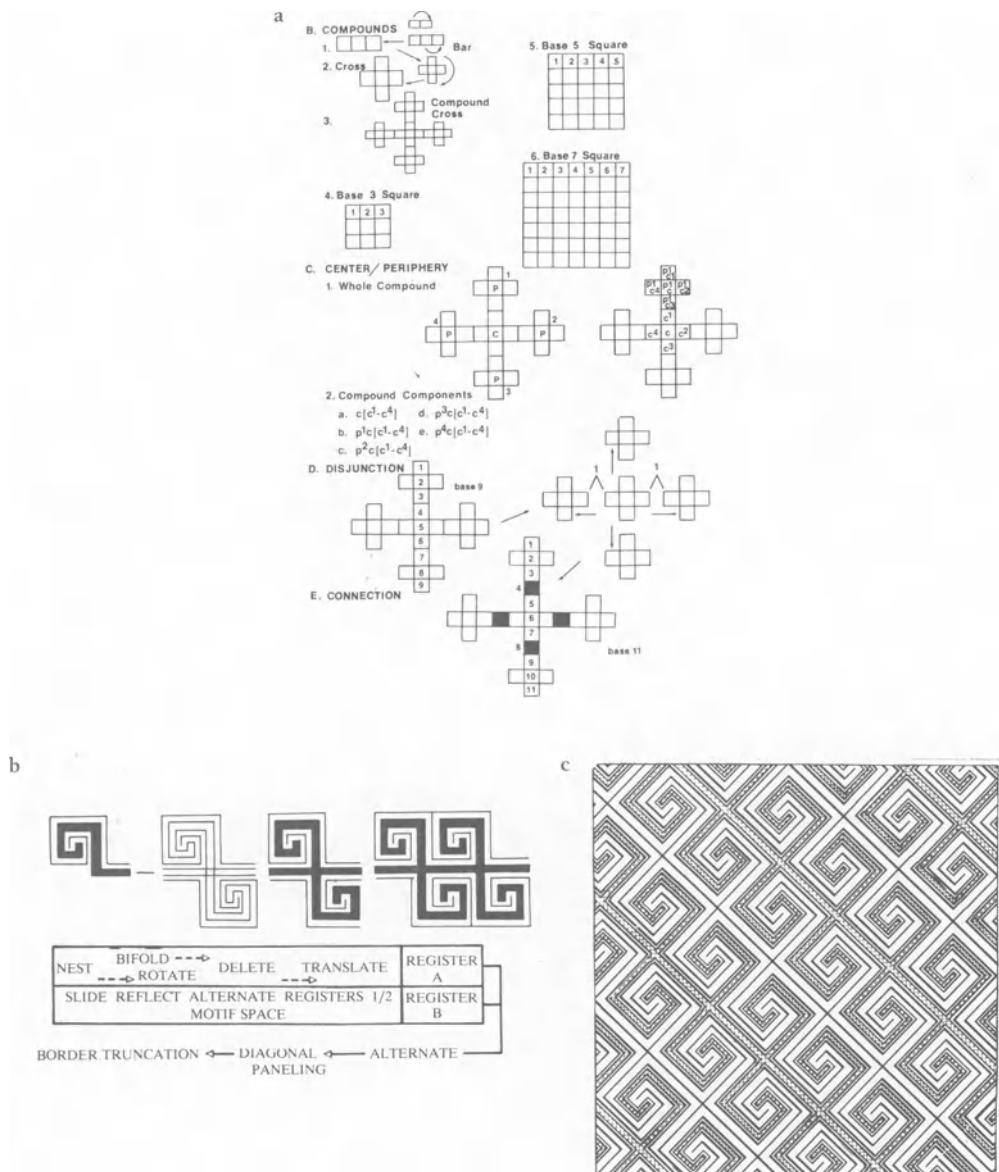


Figure 2-4. Generative grammatical paraphrases of horizontal and diagonal symmetry overall and band geometric designs. (a) A portion of a design grammar for Shipibo Class I painted geometric designs (*quênê*) illustrating the generation of a common design compound-motif (the crosslet) from design elements (the square and the bar) and the design rules that manipulate them (the base 3, 5, and 7 square matrix, expansion and merging principles). (b) The generation of the Waiwai *Waratapi* twill-weave basketry design layout based on the nesting, bifold-rotation, slide reflection, and alternate register rules applied to the basic rectilinear fret design motif (the curled body of the *Urufiri* Anaconda-Caiman-Turtle Dragon). (c) A computer graphic of the finished array, the *Waratapi* pattern used on bitter manioc (cassava) sifters, employing diagonal paneling and "infinite design field truncation" (i.e., the layouts extending infinitely beyond the confines of the design field borders truncated by the panel). See Yde (1965:Figure 110) for a photograph of the actual specimen of which this graphic exercise is a paraphrase.

Table 2-2. Individual Level Factors that Affect Style

<i>Actor</i>	Aspects: single or multiple
Gender	Configurations: simple or complex
Age	Trajectory: acts or stages
Personal identity	Selection of attributes or modes
Charisma	Recipe: RRB or RCB
Skill acquisition	Routing: linear or concurrent
Social maturity	Directionality: terminal or recycled
Roles: normal or marginal	Pattern: alternate or sequential
Status: elite or commoner	Scheduling: block or intermittent
Role reversal: regular or inverted	Practice: iterative or play
Consciousness: rational or altered states	Application: direct or indirect
Ethnic identity (autoperception)	Iteration: single or repetitive
Ethnic hierarchy (alterperception)	Aids: naturefact or artifact
<i>Intent</i>	Extrasomatic extension: tool or machine
Prototype visualized	Execution: controlled or cursive
Extension from prototype (e.g., fuzzy set)	Care: hurried or measured
Named or covert	Manufacturing facility: tended or untended
Ethnotaxonomic classification	Occurrence: rare or frequent
Continuity: permanent or ephemeral	Duration: interrupted or continuous
Value: precious or base	Scenario: random or structured
Size: large or small	Working surface: ground-level or raised dais
Scale: miniature or monumental	Interaction: closed or open
Kinesics: static or mobile	Maturity: optimized or not
Visibility: visible or obscure	<i>Standards</i>
Proxemics: close or remote	Essence: reveal or occlude
Purpose: single or multiple	Quality: high or low
Purpose: assertive or emblematic	Completion: modifiable or finished
Discovery: innovation, invention, or novelty	Execution: sophisticated or rustic
Plan: planned or accidental	Connotation: exotic or antique
Plan: preexistent or adhoc	Condition: pristine or distressed
Mechanism: theme-and-variation or creation	Fashion: modern or traditional
Function: generalized or specialized	Measurement: sized or proportional
Access: closed or open	Market: internal or external
Result: effect or affect	Ethnicity: alien or orthodox
Rank: high or low	Attitudes to nature: domination or identification
Design: idealistic or empirical	<i>Disposition</i>
Design: proof of concept	Use
Emulation: copy or replica	Display
Authenticity: fake or duplicate	Socially shared
View: archaism or atavism	Curation
Epistemology: sacred or profane	Repair
Meaning: formal or semantic	Reuse
Interpretation: intrinsic or extrinsic	Transport
Force: push or pull	Give, exchange, or sell
Primal tropes: simile or metaphor	Bury
Derivative tropes: synecdoche or metonym	Submerge or offer
Evolved tropes: kenning or synonymy	Transform (e.g., burn)
<i>Process and content</i>	Break or kill
Features: components or associations	Destroy

do not exhaust the variables that are relevant to style, nor can all the variables in the tables be discussed here. In this section, I elaborate on some of these factors, including the structure of the physical–social environment, the physical–technical constraints posed by various media, the dynamic between cultural tradition and individual creativity, enculturation methods, the social role of the artist, and certain socioeconomic and sociopolitical circumstances. I will draw on ethnographic data from lowland South America for my examples.

The Physical–Social Environment

The structure of the physical-social environment influences style by defining potentials for intergroup interaction and the local heterogeneity that it may generate, and by determining access to raw materials.

Effects on Interaction. Since styles encode information, a society's access to the flow of information within a particular geographical setting determines stylistic complexity and the rapidity with which its style cycles occur. Two South American niche contrasts show the effect of group ecological distribution on "information density" and hence stylistic complexity: (1) a backwoods versus main-river dichotomy and (2) an occupied versus no-man's land contrast in the main river itself.

Social constraints and opportunities in stylistic production follow from these zonal adaptations. For example, because of the small size of backwoods groups, who are adapted to hunting and shifting horticulture, artisan training is limited. The small size of the settlements also caps the numbers of artists and patron-consumers. Settlements are isolated in order to protect against the main-river people who "harvest" them for wives. All of these factors limit artist interaction and stimulation.

A prestige hierarchy also exists. Dwellers on the main river disdainfully regard even their lower tributary cousins as rural provincials. Thus, they do not borrow from them, though they may collect their art as "curios" (Roe 1981).

Competition on the river itself is more fierce. An upriver versus downriver enmity causes groups on the move to position themselves like the differently colored segments of a toothpaste tube, maintaining empty "no-man's zones" between them as they aggressively push each other up and down the rivers. The consequences for style are obvious. The main rivers are the avenues of ideas. The close juxtaposition of groups provides a "high density" information system composed of different styles that are borrowed more freely. Stylistic heterogeneity results.

Local Stylistic Heterogeneity and Rates of Style Change. Just as the Age-Area hypothesis would have it, the main rivers are the style "centers" with rapidly succeeding styles, whereas the interfluves are the conservative backwaters of previous stages. This is so because the pattern of movement has tended to be a "dendritic" one and within the Amazon and Orinoco basins a concentric one, from the main river to first the lower, then the upper tributaries, and finally into the interfluves. Since social interaction is greatest on the main river, more stylistic elements are available there for recombination. This means that the style cycle in the main river can turn over more quickly than the tributary and interfluvial styles, which tend to be remarkably conservative. Thus, main-river dwellers like the Shipibo are conscious of possessing an elaborate, widely viewed, and dynamic style, constantly reinvigorated by new fashions. In turn, this reinforces their self-image, helping them to maintain their position at the apex of the regional hierarchy (Roe 1981).

Access to Raw Materials. Part of this differential geographic stylistic complexity is also a simple matter of resource limitations. In complex media which require many types and qualities of raw materials, a group cannot produce sophisticated styles if the constituent raw materials are lacking or lie outside of their area of control or access. For example, in the main-river regions, in order to produce polychrome pottery such as the Shipibo have, one must control many linear kilometers of river to get

Table 2-3. Social and Contextual Factors that Affect Style and Its Interpretation

<i>Environment</i>	Literacy: nonliterate, illiterate, limited, mnemonic, or general
Ecotype (e.g., jungle, desert, arctic)	Property: personal or communal
Microniche (e.g., mangrove, lagoon, reef, or tidepool)	Ownership: usufruct or alienable
Carrying capacity: high, moderate, or low	Production: individual or group
Resource density: scarce or plentiful	Producers: commoner or elite
Resource awareness: known or unknown	Specialization: part- or full-time
Resource quality: high, moderate, or low	Specialist mobility: sedentary or peripatetic
Circumscription: circumscribed or not	Learning: early or late
Familiarity: heartland or frontier	Learning: verbal or observational
Preservational bias: high, moderate, or low	Continuity: adoption or descent
<i>Society and culture</i>	Skill transmission (e.g., archiving or social amnesia)
Society: multiethnic or not	Labor availability: scarce or plentiful
Stage: band, tribe, chiefdom, or state	Labor cost: cheap or expensive
Status: ascribed or achieved	Labor recruitment: voluntary or not
Leadership (e.g., situational, headman, big man, chief, theocrat, or king)	Labor pool: homogeneous or heterogeneous
Hierarchy: valued or despised	Labor training: high or low
Character (e.g., ritually-regulated, democratic, or totalitarian)	Sexual division of labor: rigid or flexible
Social scale: equivalent or disparate	Sexual politics: antagonistic or complementary
Ethos: warlike or pacific	Demand: generalized or specific
History: ethnic or conquest	Audience character: naive or cognoscenti
Demographics: steady, expanding, or contracting	Audience input: passive or active
Settlement pattern: dispersed or nucleated	Audience gender: single sex or mixed
Settlement density: high, moderate, or low	Audience age: younger, older, or equivalent
Settlement diversification: high, moderate, or low	Audience status: higher, lower, or equivalent
Settlement duration: long or short	Arena: public or private
Settlement occupation: continuous or cyclical	Performative context: social or ceremonial
Settlement usage: multi- or single-purpose	Domain: protected deviation or judged
Settlement character (e.g., war or trade)	Cultural evaluation: valued or unheeded
Subsistence strategy (e.g., hunter-gatherer, pastoralist, or agriculturalist)	<i>Space</i>
Subsistence range: intensive or extensive	Placement: central, medial, or peripheral
Subsistence pattern: evolution or involution	Matrix (e.g., interaction zone, foci, or culture area)
Interaction: hermetic or expansionist	Movement: canalized or omnidirectional
Mutual regard: valued or deprecated	Movement: fast or slow
Access: isolation or accessible	Proximity: accessible or buffered
Competition: slight or intense	Colonization: migration or immigration
Alliance: symmetric or asymmetric	Inspiration: stimulus diffusion or contact
Alliance type: endogamic or exogamic	Contact goal: sought or avoided
Alliance rule: proscriptive or prescriptive	Contact intensity: high, moderate, or low
Exchange (e.g., reciprocity, redistribution, or market)	Contact quality: beneficial or exploitative
Trade (e.g., silent trade, trading partner, ethnic traders, or trading system)	<i>Time</i>
Market type: circulating, fixed, or differentiated	Aspect: synchronic or diachronic
Market range: local, regional, or world	Axis (e.g., tradition, horizon, or series)
World view: this- or other-worldly	Style cycle placement: formative, classic, baroque, or pattern exhaustion
Dualism structure: static binary, dynamic, or dual triadic	Contact pattern: intermittent or continuous
Perception: 2D or 3D	Contact duration: long or short
	Chance: predictable or contingent
	Model: linear or cyclical
	Social agency: historic, legendary, or mythic

(continued)

Table 2-3. (Continued)

<i>Medium and technique</i>	Focus: documentation or problem-oriented
Modality: verbal, visual, plastic, or performance art	Documentation: complete or incomplete
Media and information: stratification of	Account (e.g., explanation, prediction, retrodiction, or interpretation)
Cross-media: isomorphism or media-specific	Logic: induction or deduction
Craft: differential development	Models (e.g., historical, biological, mechanistic, or formal)
Raw material: naturefact transform, fabriact, or synthetic	Causality: prime movers or synergy
Type (e.g., textiles, wood, or metal)	Generalization (e.g., tendency statements or universal generalizations)
Workability: obdurate or yielding	Locus: ethnographic, ethnological, archaeological, or ethnohistoric
Inherent perfectability or form: enhanced or overridden	Study: multidisciplinary or not
Practice: iterative or pre-planned	Precedent: original or restudy
Technique: additive or subtractive	Areal focus (e.g., site, site system, regional system, or culture area)
Production: single or mass	Comparison (e.g., single or multiple region)
Fabrication sequencing (e.g., hammering, annealing)	Analogy: direct historical or world comparative
Fabrication stages: retain or erase in end product	Context: fieldwork or collection
Dimension: form or surface decoration	Field rationale (e.g., investigative or contract)
Ornamentation application: direct or indirect	Methods: qualitative or quantitative
Execution: positive or negative	Duration: long or short
<i>Academic perspectives</i>	Support: minimal or maximal
Science: physical, biological, cultural, or behavioral	Research facilities: simple or elaborate
Discipline (e.g., ethnology, archaeology, history, folklore, or sociology)	Methods: simple or complex
Subdiscipline (e.g., ethnoarchaeology, field, or experimental)	Technique (e.g., interview, site survey, or excavation)
School of thought (e.g., culture historical, processual, or structural)	Instrumentation: rudimentary or sophisticated
Audience: public or private, scholarly or general	Sampling strategy (e.g., stratified or random)
Investigator: gender or age	Data type: primary or secondary
Investigator number: single or multiple	Data quality: high, moderate, or low
Investigative team: individual or task force	Data quantity: scarce or ample
Investigator's domain: prehistoric, historic, or contemporary	Informant number: single or multiple
Investigator's perspective: normal or marginal	Informant type (e.g., ethnographic person or archaeological individual)
Investigator's values	Informant accessibility: cooperative or reclusive
Investigator's bias	Informant status: common or marginal
Investigator's politics (e.g., domination, identification, or advocacy)	Attitude toward informant (e.g., condescension or respect)
Special competence (e.g., linguistic, artistic, or computational)	Basis of informant interaction (e.g., rapport, trade, or pay)
Goal (e.g., investigation or action)	Relationship with informant: intimate or distant
Perspective: emic or etic	Informant witnessing (e.g., interviews or participant observation)
Epistemology (e.g., materialist or idealist)	Dissemination: published or unpublished
Orientation: end-product or process	
Concern: substantive or methodological	

fine kaolin, manganese, and ocher slips, silicious ash for tempering, and so on (DeBoer and Lathrap 1979). In contrast, neighboring but isolated backwoods groups, who surround the Shipibo, have monochromatic, relatively more variable (sloppy), and simpler traditions (Dole 1974), in part because they lack access to these riverine resources. However, their basketry and feather arts are more complex than those of the riverine groups because of their mobility and access to game.

The Constraints of Media

If environmental distributions and adaptation bias groups to utilize certain media, these can, in turn, affect style in several ways. The intrinsic properties of a medium, which constrain its technology, and the cultural weighting given to different media each are important.

Intrinsic Properties and Technology. Some media have inherent properties that constrain the actual shape of a style, such as the “tyranny of warp and weft” in weaving (Carr and Maslowski, Chapter 9). For example, “Greek Key and Fret” designs derive naturally from two-colored twill weave (Roe 1989b). They constitute a Boasian “resultant pattern.” Other media, like painting, offer freer possibilities, such as curvilinear and rectilinear designs, multiple and varying line widths, and so on.

For the Shipibo, these constraints of media are not sufficient to defeat the clear transmission of style through multiple media. Their Shipibo style, being important to them, is “impressed” with remarkably little modification on everything from textile painting to warp-pattern weaving, pottery painting, textile embroidery, and wood carving. In contrast, other societies like the Chachi, which lay no great store in their style as an ethnic badge, allow each medium to dictate its own style (DeBoer, personal communication). For such groups, the medium really is the message.

The “Semantic Weighting” of Media: Is the Medium the Message? In any style, every artifact has many levels of meaning embedded in it and articulates with many different institutions, some more than others. However, not every medium or every class of artifact or every artifact within that class is weighted equally in semantic terms. To paraphrase Orwell, some media and certain artifacts within them are more embedded than others. This is contrary to the naïve ethnoarchaeological assumption that one medium like pottery, just because it survives long enough to enter the archaeological record, is inherently weighted heavily and must carry Wobstian information about ethnicity. In some traditions, this is true; in others, more ephemeral media like featherwork or basketry are the premier arts for the expression of such messages.

Often the medium that best harbors the central cultural metaphors of a system is the premier art form (Boas 1955 [1927]:18). For the backwoods Panoans and the Cashinahua, that medium is featherworking, and within that domain, the feather headdress (Kensinger 1975:69). One way to determine which of several media is important is to count the plethora of artifact types within each and the degree of development of aesthetic criteria with which each is judged; that is, the complexity of their ethnotaxonomic aesthetic systems. One can also note the number of their alternate aesthetic systems. In the Cashinahua case, there are at least three classifications of headdress, and within each system, many types of crown.

In contrast, the premier art of the upper tributary Waiwai and their other Carib cousins, the Makiritare and the Wayana, is twill-weave basketry. Their pottery is rudimentary and derivative in design organization. Lightweight, durable, and transportable basketry suits their jungle adaptation and reflects their familiarity with forest products. All three groups were originally from the backwoods (Roe 1989b:2). To study Waiwai pottery for social or mythic content would be much less rewarding than to study their basketry; the reverse is true for the main river Shipibo.

Ephemerality versus Permanence. A constraint on style that is similar to the semantic weighting of media is their intended ephemerality or permanence. This can determine other variables like labor

investment (Wiessner 1983) and concepts of ownership. It can also condition the skill and experimentation lavished on artifacts. "Toys," for example, are so open to play precisely because they can be the most ephemeral of objects—children being hard on material things—and will not be around for very long to haunt their creator/audience. Toys may constitute *both* an intentional "dumping ground" for such failed experiments, and an indirect way of destroying unfavored solutions in cultures where aesthetic evaluations cannot be directly expressed (Dawson 1975:148).

Media Stratification. Media may be weighted in importance in relation to their expression of not only central cultural metaphors, but also social stratification. Media may be ranked on their sumptuary exclusivity and their symbolic connotations, such as "purity" or "cultured." The contrast of aristocratic brush-and-ink painting versus plebian clay or stone sculpture in China is an example (Sullivan 1973:176).

Cultural Tradition and Individual Creativity

Style and stylistic change are the outcome of the dynamic interplay of constraints of cultural tradition and individual creativity. Within the framework provided by public opinion and historical continuity, or opposing and expanding it, the artist elaborates or structurally changes a style. Among the factors that can facilitate this are innovation within a stylistic theme; borrowing; archaism; social deviancy; and protected places, groups, or material domains for innovation. Each of these constraints and facilitators are defined and discussed in this section. I begin with the factors that constrain style.

Systemic Continuity or "Historicity." Style itself always limits the information available to humans. Thus, artists do not make choices within an infinite "noise" of possibilities (Braun, Chapter 5). Style provides a frame, a voluntarily imposed obstacle (Miller 1973), within which play can occur. So, too, *all of culture is a megastyle*, a cookbook approach to life based as much on exclusion as it is on inclusion. Thus, for example, if a style like that of the Shipibo has a "parallelism" rule requiring equal space between nested lines, then it will be difficult for artists operating in that style to conceive and execute designs with cursive, modulating, unequal line relationships. This constraint results from "design optimization," perfecting a series of formal possibilities for specific goals and thereby limiting others.

Many writers on primitive art have noted the fine line that a traditional artist must walk between adhering to approved ancestral models and innovating (Mead and McClanahan 1971:42, Rosenthal, Chapter 10). However, tradition does not inhibit art. On the contrary, by presenting an "obstacle" to be overcome, in the shape of a restricted selection of proper rules and elements of form and aesthetic canons, traditional styles provide the very framework for the artist's success (Coomaraswamy 1947:81).

Moreover, there is no contradiction between subjective individual creativity and traditional prototypes. Artists firmly believe their creations spring from their own minds, even as they "copy" traditional prototypes (Hendry 1964:395). Shipibo women artists emphatically assert that they never copy, laughing when I mentioned it. At the same time, they make little sketches of someone else's embroidered skirt in another village so that they can make a "copy" of it after returning home. Since I never saw much of a resemblance between the "copy" and the original, such instances are clearly cases of a stylistic framework being a source of "inspiration."

The Constraints of Public Opinion. Style in Redfield's (1959) perspective, still prevalent in ethnography, functions like a straitjacket composed of a series of precepts and forms, which manifest tremendous conservatism. Style thus becomes an invariant pattern, passively inherited from previous generations and copied in automaton fashion. This caricature originated from anthropologists naïvely taking at face value informant assertions that they never "invent" anything but, rather, copy from the

ancients. As Civrieux (1980:136) quotes for an anonymous Makiritare Indian: "It's always the same, now as before. The way we ate once, we do over and over again. We obey. We remember. The old ones sing beautifully. We just repeat." These statements signal important notions about the mythic world view; they say nothing about stylistic creativity save the fact that it is hidden, wrapped in ancestral legitimation.

Individuals in traditional societies innovate constantly, in everything from new songs (Seeger 1979:379) and spirits to novel myths and designs. In small face-to-face societies, informants can seldom admit it, however, often for fear of accusations of witchcraft. What the anthropologist gets is the "official ideology" of continuity with the mythic past, not actual, current cultural process.

To protect the artist from the inevitable indirect comments about his or her egoism, individual authorship is downplayed and a principle of "indirect ascription" or "deflection from self" is adhered to. The artist deflects interest from him or herself by referring creations to the ancestors. This confers ancestral legitimacy on personal creations, and moves them from the present to the mythic past.

This constraint can be seen among South Amerindians. For them, deference to others and effacement of self are important qualities of the social person. The antisocial person is egotistical—a symbol of his social atomism and the destruction of culture. This outlook holds for aesthetics. Although Indians admire the *tour de force* of the master craftsman (Tanner 1975:120, 123), Ferguson (1975:127) notes that they harshly criticize anyone who overreaches, or tries to achieve too complicated a vision for their technical attainments. Such persons fail by a public demonstration of *hubris* as much as they do by a lack of skill.

Turner's (1988:244) distinction between "social agency" and "mythic agency" is relevant here. Societies lodged in history attribute creation to unique persons like those who are alive today, thereby affirming the ability of moderns to produce and reproduce culture by actively constituting society. In contrast, societies without history passively attribute creation to the spirits or deities, thereby affirming social and moral continuity from some "Golden Age."

Archiving and Cultural Amnesia

The false portrait of the ahistorical artist as a hidebound traditionalist makes him or her appear very different from the highly creative artists in the modern Western world. In part, this is an ethnocentric byproduct, not only of our romantic notions about the artist, but also our cultural perceptions of stylistic output. Specifically, high information modern art requires wide stylistic variation, whereas low information traditional art does not. The naïve observer looks at the latter from the point of view of the former and sees no variation at all: "everything looks alike." This is an illusion: the discriminations made in a traditional style are merely more *subtle*, not different in kind.

One reason for the subtle variation within traditional art is that the artist dwells in a world marked by the absence of writing or photography. Thus, there are few ways of "archiving" examples of previous, contemporary, or alien production to serve as sources for current inspiration. There are minor exceptions to this which the Shipibo case shows. Accidents can sometimes provide novel models, as when the Shipibo and Quichua find and draw inspiration from archaeological potsherds and ancient petroglyphs. Alien curios are another source of inspiration (Roe 1981). Main-river Shipibo actually collect tributary, and hence "provincial," Pisquibo ceramics and keep them in their potting sheds as quaint mementos of past voyages. However, because the Shipibo, as main-river sophisticates, look down upon tributary dwellers, these crude vessels do not serve as prototypes for current Shipibo pots. Also exceptional, but more important to the internal dynamics of Shipibo style, is the saving of their own, earlier solutions. Lathrap (1983:30) shows how the surviving daughters of one famous deceased Shipibo innovator/shaman kept her pots as mementos and stylistic paragons. This had an unusual impact on Shipibo style because she had been a leader of a revitalization movement (Roe 1988:128).

A second reason for subtle variation in traditional art, which complements limited archiving, I

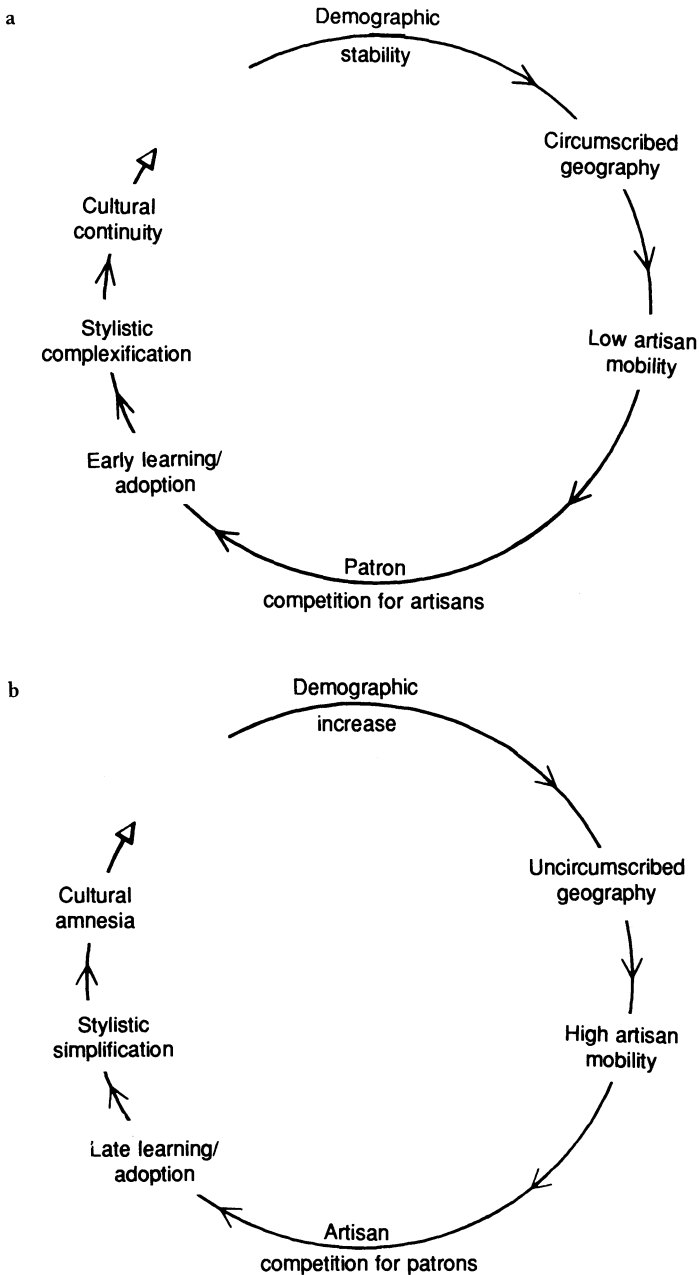


Figure 2-5. Two positive feedback loops interrelating the major social variables affecting stylistic production. (a) Demographic stability within a circumscribed geographical setting leading to low artisan mobility and consequent patron competition for artisans, early craft learning by artisans, and resultant stylistic complexity (hypertrophism of form/decoration) and cultural stylistic continuity. (b) Demographic increase within an uncircumscribed region leading to high artisan mobility and a consequent courting of patrons by competing artisans with the result of late craft learning, stylistic simplification, and cultural amnesia (stylistic information loss).

call “cultural amnesia.” This is a process whereby the slate of stylistic history is wiped clean. For example, like many lowland Amerindians, the Shipibo throw a woman’s pots into her grave after she dies, smashing and destroying older prototypes through burial. Archaeological features of smashed but reconstructible whole vessels from 1,000-year-old Cumancaya burials (Raymond, DeBoer, and Roe 1975:12) show that this is an ancient riverine Panoan pattern. Pryor and Carr (Chapter 8) demonstrate the same practice in the burning of Pomo baskets upon a craftswoman’s death, thus depriving her heirs of artistic antecedents.

Cultural amnesia also can result from the *late learning* of a style. For example, among the village potters of central India, where late learning holds for male potters (Miller 1985:77) and female pottery painters (1985:111), the consequence for ceramic form and surface decoration is *stylistic simplification* relative to other traditions where learning is an early and a long, drawn out process. Late learning for male potters is a partial by-product of another social variable, the large numbers of potters vis-à-vis their clients, which is a product of demographic increase (Figure 2-5b). A local surplus of potters means that even a man’s son will become his potential rival (1985:78), leading him to begin his son’s training late. Cultural amnesia can be the price of this strategy since the chances of the father failing to pass on his knowledge are high. In one village, a family recounted at length how they had been “ruined” because a potter had died before he could pass on his skills (1985:77–78).

All of these archival and amnesia difficulties are critical reasons behind a “lack of innovation” in traditional society. Moreover, even if something is invented, it soon slips into the two-dimensional time frame of the “ethnographic present” as far as the ethnographer is concerned. It is also attributed to ancestral causality by the informant as a part of the native artist’s own protective mechanisms to deflect attention from him or herself. This illusion of temporally shallow, traditional production, coupled with its subtle variability, masks the active struggles of individual artists.

Ethnotaxonomic Systems

Cultures vary in the degree to which they analyze the style of their own artifacts. Elaborate artistic classifications, coupled with detailed technical terminology for the elements, rules, and layouts of designs such as those that the Shipibo possess (Roe 1979; Gebhart-Sayer 1984), act as constraints on stylistic creativity. They are “plumber’s delights,” intricate crossword puzzles of technical possibilities that take artists down only certain, named paths. On the other hand, we will later see in a Cashinahua context how innovation can sometimes occur in opposition to one’s own ethnotaxonomy (Kensing 1975).

Working within a Style through Theme and Variations. Having discussed some factors that constrain stylistic change, I will now shift to those that facilitate innovation. One is the device of “theme and variations”—the mechanism of constrained choice in the artist’s tool kit (Coomaraswamy 1947:88). Innovation comes in the acceptance of the general traditional frame (e.g., the placement and organization of a design field), but with the addition of new elements at localized junctures within it (Hendry 1964:397; Forge 1973:182).

What makes playing variations on a theme difficult in traditional society is that the frame of permissible recombinations is usually more limited than it is in modern literate society. Hence, the patterns of variation will always be *unique* but also recognizably traditional. The result is a proliferation of subtle discriminations and connoisseurship. Specifically, anthropologists have long noted the apparent paradox of an overdevelopment of specific terms on the lowest ethnotaxonomic levels (“subtype” and “variety”; cf. Kensing 1975:42) and a paucity of upper-echelon inclusive terms; there may be many terms for this or that inlet or mountain, but no general term for “island.” The same mechanism is at work in native powers of subtle discrimination in taste between dozens of varieties of manioc—distinctions lost on the ethnographer (Yde 1965:29)—or the ability to differentiate between fine degrees (millimeters) of vessel size categories (Miller 1985:113). This highly developed discriminatory function results in endless artifacts, all stylistically similar, but no two alike.

Realms of Protected Deviation

Since public opinion often has such a constraining effect on stylistic production in small, face-to-face societies, there must also exist realms where experimentation can occur without constant monitoring. I call these areas where trial runs are possible the hidden "realms of protected deviation." After successfully negotiating limited approval within such a realm, the product can then be "unveiled" for the general audience in other domains with some confidence as to its favorable reception.

These realms can be sequestered *places*, where the artist can engage in novel behavior by himself (e.g., while out fishing, walking to a garden plot). They can also be a partial *in-group audience* likely to be receptive to the creator, like the residents of a men's hut.

Third, realms of protected deviation can be particular *domains* of culture, such as warfare, mythology, politics, or play. Kensinger (1975:64) locates one such domain among the Cashinahua in crude ceramic toys which are made by Cashinahua mothers for their young girls. Although classed as toys, not ceramics, these objects can nevertheless "feed back" into the ceramic tradition. A woman may be wildly innovative in designing tiny clay pots for her daughter. If another woman walks by and approves of the new shapes, the mother can make a full-sized version secure in the knowledge that she will not be laughed at. Thus, new approved vessel shapes enter the style whereas negatively evaluated ones do not.

Last, realms of protected deviation may be carefully "quarantined" from the culture by assignment to *alien production*, whether for traditional exchange or the "tourist trade." In such cases, innovation does not "loop back" into the culture, but is instead part of a parallel stream with its own aesthetics and standards of manufacture, usually inferior to those of internal production (Roe 1976:83). Alien production can be protected because it cannot be criticized for being "improper." Moreover, individuals who would not have been able to engage in artistic activity, like men in the Shipibo case, can now become "artists" (Roe 1979:189).

Cultural Attitudes toward Deviancy. Cultures vary in the *degrees* of creativity, deviance, and personal marginality that they tolerate. Individuals who exhibit deviant personalities with abhorred characteristics (Roe 1979:204) seldom impact the local style, no matter how competent they are. Their stylistic contribution is quarantined. However, if an individual is willing to adopt proper attitudes, cultural tolerance for creativity can be very high, as when Shipibo women travel great distances to seek inspiration from well-known artists (Roe 1976:81).

Archaism. The systemic features of a style and the existence of older styles as prototypes, when coupled with regard for the art of the "ancestors" or "ancients," can lead to archaism. This is the modeling of a new solution on an older rather than contemporary prototype. Because the new "copy" will be in a different place in the culture style cycle, unconscious and conscious formal alterations will usually betray it. An example of archaism is the revival and reworking of traditional native American art forms using museum ethnographic and archaeological specimens as models (Rosenthal, Chapter 10). In aboriginal settings, as among the Shipibo, an archaeological urn may erode out of a river bank or emerge from a swept plaza capping prehistoric deposits, to become an "archaistic" model (Roe 1976). When the Shipibo paddle to deserted archaeological sites to mine and grind up the ancient, weathered-soft potsherds to add as temper for their modern pottery, they can also discover something ancient and exotic. Bunzel has revealed a similar process (1972:55–56) in the Hopi–Sikyatki Polychrome case. Finally, Whitten (1976:42) has shown how modern Canelos Quichua potters use ancient petroglyphs as models via a Boasian "reading in" process aided by hallucinogens. Since a style prescribes the acceptable domain of creativity, either whole artifact classes or particular dimensions of a particular class, such as form, decoration, or color, can become archaism's field. This is illustrated clearly in a Shipibo case where form and decoration were manipulated separately, each even having been assigned for production to a different sex (Roe 1976).

Basic to this argument is the anti-Redfieldian notion of an *aesthetic imperative* (Roe 1976:81): the tendency for good artists everywhere to attempt to expand the permissible range of aesthetic behavior in their culture through the conversion of “nonart” domains into realms of “art.” For example, in a culture where the surface decoration of ceramic vessels is an appropriate domain for the expression of art, artists might also attempt to extend vessel forms from the realm of RCB into RRB.

Borrowing and the Constraints of Grammatical Similarity. A style becomes a set of blinders through which artists look out on the world and perceive other styles. When two groups come in contact, their styles have to be grammatically similar in terms of isomorphic or cognate elements, rules, and motifs to even be appreciated let alone borrowed. I call this a special case of “cultural congruence.” For example, a group may prefer alien geometric designs because they look similar to their own productions, while rejecting representational designs. If two styles are very different structurally, they become simple mutual “noise.” The works of each party are regarded as “ugly” and ignored, save as visual confirmation of the “inhumanity” of those who made them. *Appreciation is the first step in adoption* (Roe 1976:77).

Similarities can be in *complementary* distribution as well. Consider a culture in which the vessel form tradition is very complex and allows latitude for the novel recombination of forms and the creation of new forms (Miller 1985), whereas the surface decoration system is more limited. In that case, artists will tend to expand their formal possibilities by borrowing in the area of surface decoration. An example would be European floral motifs on aboriginal forms. In contrast, for systems like the Shipibo, where play is present in aboriginal vessel form categories, but may not rival the very complex recombinatorial possibilities for painted surface decorations, the opposite may occur: traditional designs may be placed on a Western-style plate. Thus, to predict which domain, vessel form, or surface decoration will respond to foreign influence, one must first consider the internal productivity of each domain from the point of view of the artists themselves and their “aesthetic imperatives.”

Finally, a completely alien stylistic element can be adopted wholesale, “in a contextless way simply because it is unintelligible” (Roe 1976:80). It may then be assigned a new meaning and/or name. Further, the borrowed item may serve as a mere “mine” for raw material to be used in constructing a totally different stylistic artifact. For example, a Navaho woman might unravel *bayeta* Western trade cloth to use the thread for a Navaho-style rug.

This phenomenon is important stylistically since it can produce a renaissance in the native arts. The incorporation of Old World technical items, like aniline dyes or glass beads, has sparked “hybrid vigor” in those countries where Indian systems are still viable (e.g., Panama, Colombia, Ecuador, Peru, and Chile). Whole new artifact classes are created, like Shipibo or Waiwai patterned beadwork, that were impossible with native materials. In contrast, it has produced art–craft sterility in those countries where no Indian tradition remains (e.g., Nicaragua, Costa Rica, Argentina).

Artist/Artisan Mobility. Within a region, whole villages may be characterized by constraining rule behavior, whereas other villages may be relatively lax in their realization of norms (Miller 1985:21). A village or subcultural group that values the replication of ancestral patterns will resist both alien prototypes as well as the seeds of variation within their own tradition, favoring stylistic stasis. This milieu and stylistic conservatism are encouraged by a sedentary life-style, which produces a familiar audience whose “public opinion” can carry great weight in favor of the traditional. Conservatism is also encouraged by restricted and well-known local environments organized by ritually regulated technology. In addition, sedentism favors social interdependence and cultural mechanisms to lessen competition, like primogeniture and ultimogeniture, which do not encourage innovation.

In this light, one determinant of stylistic change can be artisan mobility within accessible geographical regions (e.g., potters in the Deccan plain [Miller 1985:22]). To change, one needs to be less wedded to established practice, and the easiest way to achieve this is to move and leave the tradition behind. Where occupant mobility characterizes whole regions, social relations (e.g., castes in

the Deccan plain) can be more fluid and villager adherence to rules laxer than it is among highly sedentary populations living in ancient propinquity (e.g., the isolated villages of potters in the central Andes). If one can't escape one's public, their opinions and expectations will carry greater force than if one can.

Whether individuals or whole social groups move is another essential variable that affects style change. Immigration of the individual into an alien world produces stylistic homogeneity because the migrant is assimilated into the more powerful resident style and culture. In contrast, the migration of whole social groups promotes stylistic heterogeneity and cultural pluralism because each group has the support mechanisms to retain their own styles and ways and reject, through ethnocentrism, those of their neighbors.

Teaching and Learning: The Effects of Instruction Methods

Whether creativity is covert or overt depends on how instruction occurs. Shipibo society, like many face-to-face groups, does not encourage direct art criticism. The properties of the language enable people to couch their opinions in a very convoluted, diplomatic fashion. Peer direction and mentor teaching are nonverbal.

One would expect greater stylistic variation in such cases where artists are not told the specific ways in which their creations are good or bad; however, just the opposite is true. Artists become very cautious not about innovating, but about showing the products of their innovation. Many a bizarre pot hides in a Shipibo woman's potting shed, never emerging unless a nosey anthropologist pulls it out, in which case embarrassment is acute. Since very little is said, one doesn't know what one can get away with except after the fact.

This phenomenon explains the common Amerindian cultural pattern of watching, but not trying to "practice" a skill, at least in public, before one has completely mastered it. This is also why certain "realms of protected deviation" are important in such societies.

The constraint of visual and motor learning produces another variable, age of learning (Figure 2-5), which, in turn, yields another variable, differential stylistic complexity. Complex design traditions, like the Shipibo's, derive from the intensive practice that only a long apprenticeship can produce. In turn, this arises because the visual patterns of nonliterate learning themselves offer no short-cuts and take a long time to become effective. Thus, skills are age dependent in traditional societies. Older people also know more than young people in a traditional society because *knowledge does not obsolesce* and they have a longer time to perfect their art.

In contrast, societies that encourage verbal instruction, questioning, and overt criticism speed up the learning process and, therefore, the amount of learning. They also decrease the age of competence for actors in society, which encourages the obsolescence of knowledge and opens up avenues of experimentation. Rather than condemning overreaching, such societies, like our own, encourage it: "at least he tried."

Teaching and Learning: The Effects of Kinship Structure

In this and the following several sections, I consider how specific kinship structures impinge on stylistic production. Attention will be directed to the *locus* of learning: when, for whom, and from whom is the stylistic lore transmitted? The value of the Deetz-Longacre (D-L) hypothesis in particular will be considered.

Style and Domestic Power: Males Avoiding their Mothers-in-Law. The Deetz-Longacre hypothesis (Longacre 1964; Deetz 1965) makes a bold but simplistic equation between specific unilineal kinship organizations and stylistic output: matrilineality yields design homogeneity whereas patrilineality yields heterogeneity. Its lasting contribution is its emphasis on the cultural transmission of style—the

idea that propinquity produces artistic homogeneity. Although its specific linkages have been criticized (Lathrap 1983), due to myriad social complexities such as child brides and cross-lineal training, the general presupposition appears correct. This is particularly the case when that *propinquity occurs as the style is learned*. Even today, studies that purport to refute the conclusions of the hypothesis usually ignore the essential variable of *when*, not just from *whom*, style is learned.

In African cases, patrilocality may produce stylistic uniformity rather than heterogeneity. This occurs because women learn their potting from their *mothers-in-law*, *not* their mothers. They do not learn their craft early in life, as was assumed to be invariably the case, but only after their post-marital change of residence. Thus, the bare D-L hypothesis concerned with propinquity holds.

Miller (1985:111) discovered the same phenomenon in central India, again dealing with a patrilocal situation where political considerations require a man to keep himself distant from his wife's family. Men travel great distances to search for their brides and bring them back to their natal village. This expresses a power differential of wife-taker over wife-giver (1985:78). Such distancing of a man from his affines effectively eliminates them, especially the wife's brothers, as an influence over his life while enhancing his control over his wife. This situation also indirectly strengthens the power of the husband's mother over the bride. The young woman is at the mercy of her mother-in-law, thus ensuring the bride's assimilation of the mother-in-law's style. In her day, the same thing happened to the mother-in-law. From the point of view of style, this amounts to design-executional homogeneity, since all the women living in propinquity will have learned their art in the village. Thus, they will betray no trace of the style(s) present in their widely-dispersed, natal villages.

Style as Choice: Of Adopted Mothers in Adulthood. In Japan, some men who enter into craft families as apprentices change residence and surname after marriage. Extreme stylistic continuity occurs in ceramics and other media, in line with the expectations of the D-L hypothesis. In this case, however, homogeneity is *not* the product of mothers teaching their resident daughters their craft, as the D-L hypothesis predicts, but rather of the adoption of adult sons who learn their craft late in life (Link 1975).

Five variables interact to explain this pattern: (1) demographic stability; (2) control over genealogical vagaries via adoption; (3) geographic circumscription; (4) resultant artisan sedentariness; and (5) high status and secure support for a craft, making entry into it desirable.

Style as Obligation: Of Adopted Mothers in Childhood. In the Japanese situation, the stylistic apprentice is an adult, male aspirant who voluntarily enters the adoptive relationship. The opposite of this is the Cashinahua case of obligatory girl adoption. This "exception" to the D-L hypothesis is a result of the kind of sociological complexities that do not bode well for archaeological reconstruction. Here, a variant of the ubiquitous lowland (interfluvial) two-section, symmetrical exchange connubium operates (Kensinger 1975:64). Patrimoiety exchange females as children to become the brides of agnates in the opposite moiety. The child brides are thus destined to be raised by their future mothers-in-law, to be taught the ceramic and other feminine arts by them. The resulting stylistic uniformity between mother-in-law and daughter-in-law violates the prediction of the D-L hypothesis that design similarity results from mother and daughter coresiding and the daughter learning her art from her mother.

Even in the case of those Cashinahua women who are not exchanged as child brides, but as young women, the transmission of style takes a slight "detour" from strict lineal descent. Mother's mother (real/classificatory), rather than mother, assumes the role of teacher. The mechanism for this is alternating generation-namesake groups (Kensinger 1975:64). The effects of these patterns are visible in such societies where the women paint body and facial designs on their men (husbands, sons, brothers). Early ethnographers asserted that an individual Cashinahua man's patrimoiety affiliation could be ascertained immediately from their face and body paint. These distinctions in intragroup emblematic style continue to be reinforced by public opinion sanctions (Dawson 1975:148).

Constraint by Wife Capture. Shipibo young men regularly went on raiding expeditions to “harvest” the young girls of the smaller backwoods Panoan societies that surrounded the Shipibo’s riverine niche. They undertook these expeditions with almost “missionary” zeal, convinced that the young girls were being “saved” for a civilized life (Roe 1982a:83). In addition, a young man could thereby escape the bride-service he would otherwise owe to his Shipibo parents-in-law, as well as his postmarital, matrilineal residence requirement.

The first step in acculturation upon returning to the Shipibo village was a total remake of the captured girl’s “cultural skin.” Her hair was cut, her face-paint erased and remade, and her necklaces and skirt destroyed and new ones substituted, each in Shipibo style (1982a:84). This is an illustration of “emblematic” style at its crudest; part humiliation, part “boot camp” psychological remake. The girl was given to her captor’s mother for training, an effective step since Shipibo girls learned their crafts early in life.

Here, just as in the East Indian case, heterogeneity of bride origin is no predictor of stylistic continuity; propinquity determined all. As mentioned above, many of these “redeemed savages” were highly orthodox in their stylistic production.

Style “Crossover” and Abandoned Role Models: Rejected Mothers. Propinquity is a determinant of style for a matrilineal society where women continue to reside in their mothers’ villages and learn their crafts there. However, among the Shipibo, the variable of the relative prestige of the coresiding women can determine who will be the mentor; it is not necessarily the mother. For instance, one Shipibo matriarch who had low prestige in her art capabilities was forced by a flood to relocate to a compound of high prestige artists, which included a well-known matriarch and three highly esteemed, coresident daughters (Roe 1980:51–57). The relocated matriarch had a daughter who was old enough to learn the design system and was just acquiring the art. The relocated matriarch was criticized for her prosaic, derivationally “low hierarchy” geometric designs, which hovered near the “kernel” of the style. She presented little insight into designs compared to the resident matriarch and her three daughters who had intricate, “upper hierarchy” designs. Consequently, the immigrant mother actually encouraged her daughter to emulate the resident matriarch’s high-prestige style (Roe 1980:62).

In this case, both the D-L hypothesis and the hypothesis of simple propinquity were true. The resident compound behaved according to the dictates of the D-L hypothesis, with the three coresident good artist daughters following their mother, the matriarch, in her own microtradition. The immigrant compound (the poor artist mother and her learning daughter) followed simple propinquity in that the former helped the latter emulate the dominant macrocompound style of the highly regarded matriarch. The key variables were the differential size of the social units (the small size of the immigrant compound made it the equivalent of an “individual”), emic ethnoaesthetic categories (how the Shipibo themselves regarded praiseworthy art and artists), and kinship regard (how daughters regard mothers as role models). These conditions could be documented by archaeologists by noting finds by exact provenience, within and between compounds, and measuring the relative complexity of the design hierarchy by generative grammatical analysis.

Style Skipping Generations: Grandmothers and Adoption. Another mechanism that can generate stylistic heterogeneity within matrilineal, matrilineal societies, which are imagined to be the bastions of the D-L hypothesis, is *grandmother–child adoption*. Among the Shipibo, an older woman may be given a young granddaughter by her daughter and the grandmother will adopt the girl as her own. In normal cases, this is a form of social aid for the older woman, the granddaughter looking after her. However, in special cases, adoption is a form of “apprenticeship” so that a girl can learn the art of a renowned grandmother, *bypassing her mother* (Gebhart-Sayer 1984:16). This same “skipping of generations” was seen in the Cashinahua example, above. This circumstance concerns ethnographers more than archaeologists.

The Dual Transmission of Style: Sexual Aesthetics. However, simple propinquity cannot override distinct cultural channels of style transmission. This is evident in the Shipibo case of the dual transmission of style. Each sex alternates in the production sequence of many artifacts, monopolizing various stages through task segregation and complementarity. From this, I predicted that normal male aesthetic notions would be isomorphic with female ones, but more simplified because of the masculine exclusion from graphic art which allows for detail. Instead, I found radically different male and female aesthetics. In particular, from a sampler of orthodox geometric designs and radical representational designs that my students and I simulated via computer, I discovered that Shipibo men responded positively to more “psychedelic” designs, especially ones that combined multiple outlined, geometric forms with zoomorphs such as eagles, felines, and snakes. All of these creatures are the major spirits of lowland animism (Roe 1982a). These preferences reflect the fact that Shipibo men are the shamans. They employ hallucinogens that cross-culturally (Reichel-Dolmatoff 1978b) produce intricate, rapidly shifting, technicolor geometric, phytomorphic and ophidian figural visions. In contrast, Shipibo women do not take the drug. They responded favorably to the more “orthodox” geometric arrays among the samplers.

This sexual dual transmission of and preference for styles is widespread in the lowlands (Whitten and Whitten 1988). It has consequences in even the cases of the aberrant male artists, who may work side-by-side with their wives, but nevertheless show no mutual influences (Roe 1979:205).

The Social and Economic Status and Role of the Artist

Social Status and Role. Social status, which is the position one occupies, and social role, which is the rights, duties, and actions pertinent to a status, are key determinants in composing the identity of the artist/artisan and his or her stylistic output. In those tribal societies where artists have high status, often because they also function as supernatural agents, they are courted by patrons. Publicly proclaimed, they are given praise-names and other marks of distinction (Thompson 1969). In such cases, personal or “assertive style” (Wiessner 1983:257) is marked and stylistic continuity spans generations. A “cult of personality” (Lathrap 1983) flourishes, which is associated with relative stylistic complexity. Through general rather than specific demand, greater latitude in the aesthetic imperative is allowed.

These characteristics of artists and their works occur when the need for skills is great and the artifacts are of central cultural importance and complexity, like the Gothic cathedrals of medieval Europe. In this case, patrons courted the artisans. At the same time, internal hierarchies appeared within the artisan guilds. Also, because esoteric knowledge is power, the mechanisms of difficult admission and long apprenticeships appeared (Wieder 1979).

In contrast, where artist position is low, authorship of individual artifacts can be a group endeavor, resulting in low standards of workmanship and knowledge and, hence, low artifact complexity. Isochrestic stylistic variation (Sackett 1977) may dominate. A famous example of this circumstance is Bohannan’s (1966) case of Tiv made-by-committee chairs.

If the status of the craftsmen in a more complex society is in the middle of a hierarchy, like the potting caste in Miller’s (1985) study of East Indian peasants, they will tend to “negotiate” a higher position by manipulating style categories while deferring to high prestige customers within the indigenous exchange system. Hodder’s (1986) view of style as a bridging mechanism for power relations is pertinent here. In this case, the hierarchical arrangement produced a greatly diverse and elaborate set of functionally redundant vessel forms (Miller 1985:65) as artisans attempted to make themselves increasingly indispensable to their patrons through ritual presentations, which are timed to the calendrical ceremonial round. The artisans gradually introduced “new” forms (modes) to their patrons by subtly varying form and decoration. Thus, one has the paradox of a technically simple, mold and wheel, peasant pottery tradition (Miller 1985:49) that nevertheless has a large number (51) of differently named but stylistically similar vessel categories (Miller 1985:36). In such cases, the social function of vessels clearly outweighs their utilitarian function so as to generate redundant stylistic

hypertrophism. The boundary conditions for this circumstance are the relative complexity of the society and its capacity for involuted systems of knowledge and the elaborate artifacts based on them.

Adoption is another status-related factor that can impact style. It can be *voluntary*, as in Japanese “familial adoption,” when a master craftsman has no progeny or adequately skilled progeny to continue his line of work. Adopted son-in-laws take over the mastercraftsman’s surname and continue his style. Here, the status is sought after, leading to very high levels of “esoteric technology” and exceptional stylistic continuity (Link 1975). Adoption can also be *involuntary*. An example is the capture of female artisans for wives in small-scale, “tribal” societies where there is no option for them but to assimilate. The production of Shipibo captured women who were once ethnic Mayoruna, Cashibo, and so on, is a case in point. They produce very orthodox, conservative Shipibo-style pottery. The social pressure on these “savages” to become civilized Shipibo is overwhelming (Roe 1982a:84). In contrast, “genuine” Shipibo women who are secure in their cultural affiliation can be highly innovative in their art.

“Male Appropriation” of Style. In subsistence economies that emphasize the male side of the sexual division of labor, as in hunting strategies, men gain in prestige. They may attempt to expand that prestige differential by preempting, trespassing on, or “appropriating” otherwise traditional female crafts. For example, “in one [Waiwai] instance it was observed that a man did the firing of pottery; on that occasion *he had arranged his hair like a woman* [emphasis mine]” (Yde 1957:33). Similarly, in the Cashinahua culture, men seem to have appropriated some female art tasks (Dawson 1975:131), albeit still within masculine realms like wood, bone, or gourd carving (1975:131). These altering roles become measurable when there are characteristic differences between male and female production, such as whether straight or curved lines predominate, or when there is differential use of hallucinogenic symbolism (e.g., brilliant coloration, multiple outlining). This is the case whether forms are representational or geometric. Such examples can be found in the art of the Shipibo and the Waiwai (Roe 1989b) as well as those of the Northwest Amazon (Reichel-Dolmatoff 1978b). Male appropriation is a species of sexual politics. It is mirrored when women are allowed to use otherwise tabooed male stylistic attributes (e.g., feather crowns, beadwork) during their puberty rites (Roe 1982a:99).

The Specificity or Generality of Demand. The degree to which demand is specific or general, following from the artist’s status in a society, is perhaps the most important social factor in stylistic production. When the audience/consumer gives a very specific demand to the artist, down to size, specific imagery, materials, and so on, the invariable result is mediocre art. By circumscribing freedom of play, the audience forces the artist to change from an RCB to an RRB program. This is frequently the case in sacred contexts (Rosenthal, Chapter 10). On the other hand, where the demand is quite general or generic (“we just want one of X”), much room remains for the artistic imperative to juggle creativity with norms. The results are complex stylistic statements and elaborate art (Biebuyck 1969:19).

Another social mechanism allied to the generality of demand is the degree to which production is truly anonymous, as in some modern cases. This is the opposite of the romantic notion of the “anonymous” tribal or peasant creator, who may be anonymous to the collector but is only too well known to his or her own society. Nor is it the “false anonymity” of lost attribution in small-scale societies. Complete anonymity represents perfect generality of demand, and hence leads to highly creative solutions (Kaplan 1981:405).

Sociopolitical Constraints on Style: Personal Presentation, Public Power, and “Media Displacement”

Many of the factors that I have covered thus far operate within a “micro” context and on a synchronic level. What of more general trends that are discernible in diachronic operation? One long-

term phenomenon is where the locus of stylistic complexity is transferred from one medium to another. I call this “media displacement.”

An example of this process can be found in the paradoxical case where the complexity of pottery styles devolved while sociopolitical stratification evolved in Puerto Rico between the 4th century B.C. and 13th century A.D. (Roe 1989a). Specifically, as complex tribes evolved into chiefdoms, pottery became inadequate for projecting messages of political power, and monumental architecture became the locus of stylistic and power displays (see Morris, Chapter 13, for a similar example regarding Inka metal artifacts).

In situ development went through three stages. The initial period (B.C. 300) involved the migration of South American tribes with the Saladoid Hacienda Grande and La Hueca styles into the islands. Groups with the former style produced fine, complex-silhouette pottery with unique polychrome painted decoration (Figure 2-6a). Those with the latter made small, exquisitely worked lapidary art (Figure 2-6d) out of exotic stone like amethyst. During the second, Pre-Taíno stage, beginning around A.D. 600, trade links with South America ruptured and population increased, leading to local adaptations and greater use of the island's ecological zones. The eastern half of the island was characterized by the Elenan Ostionoid culture (Figure 2-6II), arguably a “complex tribe.” Its pottery was extremely simple: vestigial painting and incipient modeling and incision (Figure 6g–h) on simple forms of “primitive sphericity”—an example of Kroeberian “pattern exhaustion.” At the same time that pottery underwent such radical simplification, crude petroglyphs (Figure 2-6e) appeared for the first time, some in little ball parks (Figure 2-6f). They are small carvings, often just “simple face,” human head depictions. The sequence ends around A.D. 1200 in the Esperanza style and the Chicoid series, the material culture of the protohistoric Taíno (Figure 2-6III) who were met by Columbus in 1493. Taíno pottery is slightly more elaborate (Figure 2-6i), but still unpainted, modeled, decorated with repetitious incision, and produced in vast quantities. This pottery is accompanied by monumental lithic art: petroglyphs as ball-park markers (Figure 2-6j), and idols (Figure 2-6k).

This “media displacement” of the locus of stylistic complexity from ceramics to monumental stone sculpture occurred for understandable reasons tied to increasing social complexity. The early Saladoid pottery and lithic amulets were meant to emphasize an individual's cultural attainments or aspirations. They marked a bias in the material culture toward “personal presentation,” whereby the perception of an individual's “culture” was gained by it being offered and appreciated in the form of small objects of exquisite workmanship intended to be seen close up. Sometimes these functioned kinetically as they were used during the presentation. For example, one might comment on a small, beautifully painted, Saladoid effigy beer mug as one drinks the proffered beer it contains. As one drinks, the clay pellets concealed in its handles rattle as the cup is upended. Saladoid artisans elaborated the *process* of presentation as much as its *end*. Analogues in recent Shipibo culture suggest this interpretation.

Such personal presentation styles become visible within the presentational context—the stage for which objects are made—when they are brought out for use and critique before specified “publics.” In tribal societies, as among the Shipibo, these occasions are often “nonordinary” village and intervillage fiestas and ceremonies marked by supernatural intervention. They may involve distinct subcultures and styles brought together from hundreds of kilometers. Staging is the factor that weighs most heavily in the production of the artifacts. Artisans who have special talents and are recognized within the village for their superior production in a medium are sought out to make these objects.

However, what happens as population and competition increases, leading to increasing stratification and larger-scale presentational contexts? Miller (1985:74) has shown that earthenware pottery is a uniquely “democratic” medium, not well suited to the display of economic wealth or political power under such conditions. Thus, rather than small objects being offered for presentation, the actual artisan becomes the affecting artifact; he is accompanied by his production and presents it. “It is

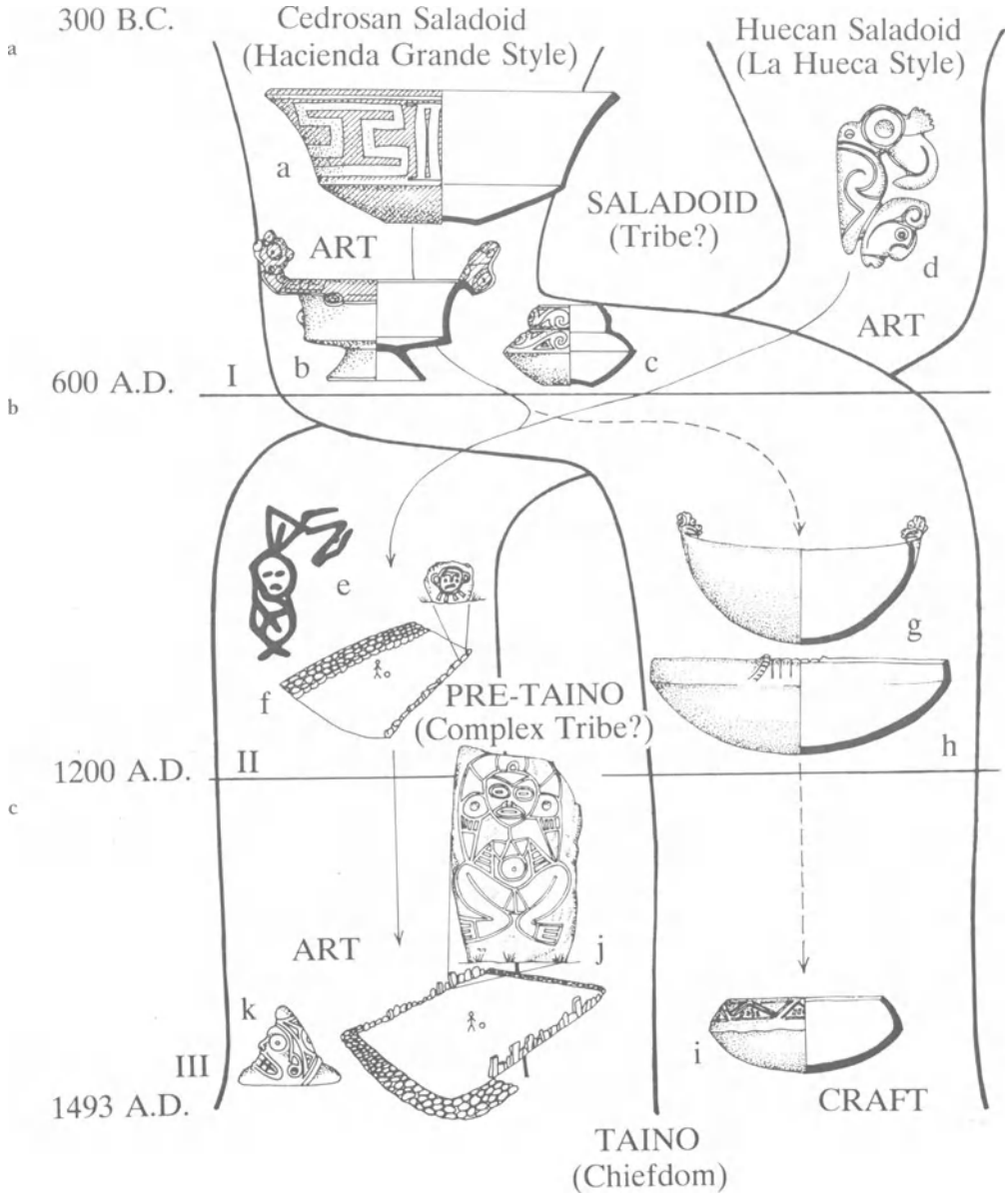


Figure 2-6. The diachronic crossover of art and craft in lithic and ceramic artifact categories as a result of sociopolitical complexification in prehispanic Puerto Rico. (a) The “personal presentation” material culture of the migrating Neo-Indian Saladoid pioneering horticulturalists from South America. (b) The “pattern exhaustion” interlude in Elenan Ostionoid material culture and its shift to an incipient material culture of the demonstration of public power wherein the locus of art crosses over from ceramics to monumental lithic artifacts and features. (c) The fully developed material culture of public power characteristic of the Taino chiefdom in protohistoric times. (All artifact drawings are based on 1:1 scale section drawings, tracings, and photographs taken by the author.)

considered extremely courteous, when an important guest arrives, to have the potter come and present a [small water jar], and assist in serving the meal" (Miller 1985:88).

Analogously, as Antillean society became more hierarchical during Pre-Taino times, the locus of stylistic complexity shifted from small pottery vessels to large, static stone-work which demonstrated the power to mobilize and commission labor through its very weight or immobility. Moreover, being visible from afar, this art of public display could be, and often was, crude in execution. By the succeeding Taino times, ball parks got bigger and the petroglyphs that bordered them became more complex and larger (Figure 2-6j). They included full-sized figures, each a different personage such as aviforms, and anthropomorphic and were-theriomorphic depictions. In addition, the scale of all other stone carvings became large and differentiated. At the same time, pottery was mass produced with simpler, stereotyped vessel categories and surface decorations, consisting of repetitious plastic designs rather than painted ones (Figure 2-6i).

To summarize the Puerto Rican case, one first finds a material culture of personal presentation reflecting egalitarian relations and noncoercive authority. This is indicated by its (1) small size; (2) jewel-like workmanship; (3) semiprecious, exotic raw material; (4) close-inspection visibility; and (5) features used in the kinetic presentation process. Then the process of the "media displacement" occurred, reflecting the development of more hierarchical sociopolitical relations within the evolution of a chiefdom. A material culture of public display and public power emerged, evidenced in its (1) large size; (2) crude workmanship; (3) common, local stone raw materials; (4) long-distance visibility; and (5) static features.

THE MYTHIC LEVEL OF STYLE

Style is influenced not only by a myriad of social factors, but also ideational ones. These operate on the fourth and fifth levels of my model for studying style, the mythic (Lathrap 1973:94–95) and structural levels. Myths are sacred stories that were believed to be true by those who tell them and that "explain" the *form* (morphology) and *behavior* (process) of things and how they came to be differentiated. Myths therefore can be an important determinant of style. They present the overt *message*, either verbally, behaviorally, or in the iconography of the material culture. They are the surface manifestation of the unconscious patterning that occurs on the structural level, or the total context of *information* derivable from behavior. Thus, the mythic level differs from the structural level of style by its accessibility, yet is interrelated with it, as "representation" is to "thing represented." Thus, myths in material culture are the portals that the analyst uses to reveal and understand the unconscious structures of culture, just as the syntagmatics of character and episode are used to reveal the paradigmatics of the opposition and the transformation of symbols in verbal texts.

In examining the mythic level here, I apply a "contextual approach" (Hodder 1986) to South Amerindian arts and crafts and the Caribbean systems derived from them (Roe 1989a). Holism is suitable in this case because the individual artifact is a "microcosm of the macrocosm" (Roe 1989a, 1989b). The artifact symbolically represents in its typological aspect, and recapitulates in the contexts of its processual fabrication and use, the pervasive animism of the world view of the groups that create it. When this view of "object as myth, myth as object" is based on the animistic principle of the total spirituality of the universe, bespeaking an identification with that organic whole, I call this relationship between style and mythology "technological animism."

Technological animism explains why so many South American artifacts are really anthropomorphic, zoomorphic (Figure 2-6g), or were-theriomorphic effigies: they are more than utilitarian items. In whatever medium they are executed, both the *form* and *surface decoration* of these animistic artifacts are mythical "transforms" of creatures which also act as the major "natural symbols" in South

American cosmology. For example, fire-fans and manioc pressing tubes originate as naturefact freshwater rays and anacondas that fall from the sky. Even the designs that cover the surfaces of these artifacts are “copies” of the skin markings of their reluctant animal donors.

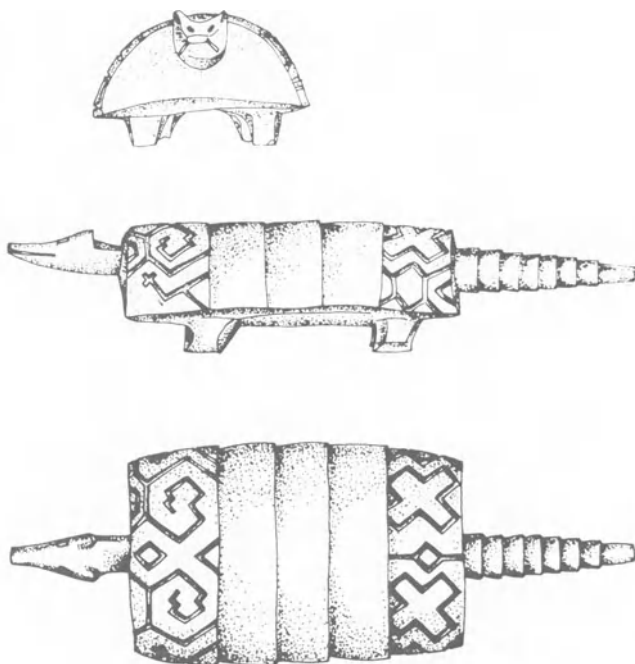
A myth that I collected from the Waiwai in Shefarimo (Roe 1989b:23–26) on the origins of their twill-weave basketry designs from the Dragon *Urufiri* illustrates this mechanism of the “protocultural gift.” It also explains the differential skill levels of basketmakers. The myth relates that long ago an evil father-in-law sent his luckless son-in-law out to hunt “agoutis,” knowing that the Dragon, *Urufiri*, a caiman-anaconda monster, would eat him. However, the hero discovers the Dragon flying through the air, looking like an anaconda but covered with the fur of a jaguar. He kills the monster, skins it, and brings the skin home, where he spreads it out on the floor of the communal hut. Peals of thunder and bolts of lightning fill the hut while the son-in-law tells his frightened father-in-law and the other village men to gather the proper materials for certain specified basket categories they are to make examples of. They return, try to “catch” the designs they see on the skin, as one would an animal, but the designs are obscured by the lightning (i.e., are hard to understand). Finally, some men learn to copy the designs, while the father-in-law, being an ogre and hence powerful but dumb, remains ignorant of the art.

Looking at a basket and appraising its *waratapi* pattern (Figure 2-4c) from *Urufiri*’s skin will “trigger” a recitation of this myth, just as a telling of the myth will “call up” the artifact as example. This process of “mythic empiricism” shows the intimate relationship between myth and material culture. The whole stylistic process, from the selection of the raw materials, through the production of the form and its appropriate decoration, to the sex that employs this technology and the type of task for which it is designed, are all systemically linked to the cosmos in animist technology. Microcosm recapitulates macrocosm.

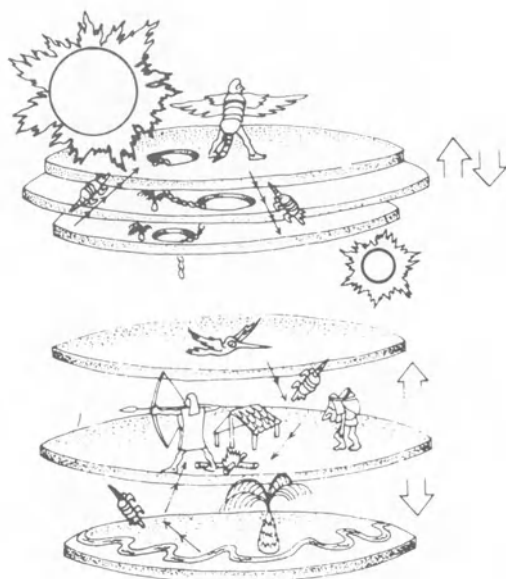
This heavy symbolic, semiotic loading of artifacts and the artifactual process helps one to understand the larger system of which the individual artifact is but a concrete manifestation. For example, Figure 2-7a illustrates three views of a Shipibo nine-banded armadillo carved out of palm wood, itself a subsidiary symbol for the paragon species, the giant armadillo. The little sculpture is a representation of the Shipibo myth “The Giant Armadillo and the Other World.” The myth explains the simultaneous divergence of human and animal nature as the levels of the universe also diverge and differentiate (Figure 2-7b). Women with burden baskets fall from the broken ladder to the Sky World and become armadillos when they hit the Earth. The curiously “flattened” form of the depiction references the fate of the women, now armadillos, who were plastered to the ground after their fall. It also references a cognate myth about a vain “armadillo Icarus” who fell from the sky when the feathers he pasted to his scales melted in the heat of the sun. The front design panel of Figure 2-7a has the Shipibo version of the nested and curled anaconda designs that reveal the armadillo’s “scaly” nature, which is significant to several analogies. The women’s round burden baskets are equated with the spherical armadillo’s casque. Women as horticultural diggers are equated with armadillos as excavators. The sculpture also represents a food animal hunted for its flesh as women are “hunted” (courted/seduced) for their flesh (the sex = eating equation is ubiquitous in the lowlands). Lastly, the armadillo is a constellation in the sky, for in the myth, the armadillo dug through the Sky World to fall into the Lower World to escape a celestial hunter. Thus, the sculpture depicts a primordial “female” animal that digs in the feminine element, earth.

In sum, just as the mythic level of style reflects the structural level, so the artifactual level reflects the mythic and vice versa. The significance of this is that myths are used to justify the orthodoxy of form and process, as well as to clothe deviations from that orthodoxy in ancestral legitimation. Structure, as deducible from myths, may be so practical as to bias one group to select one basic item of subsistence technology over another (e.g., bow and arrows versus blowguns) within an equivalent environment (Rivière 1969). Indigenous cultures engage in such acts of *mutual reference* on every level of their material cultural styles.

a



b



THE STRUCTURAL LEVEL OF STYLE

The structural level of style comprises the highly abstract and frequently unconscious principles that reflect the social order and that map the cosmos including the physical order of the universe, its origins and fate, and the beings that inhabit it. While less obvious than the conscious representations of the myths that actualize them, these structures are nevertheless deducible from the isomorphic order they can produce across many media ("cross-media congruence"), providing useful keys for separating the universals from the particulars of a style and for reconstructing those structures. If it can be demonstrated, for example, that Southeast Asian populations follow the same tripartite structural recipe in processing everything from indigo dye and hemp cordage to the bodies of their kings (Adams 1977), then one gains confidence that more than subjective metaphysics is involved. A primary metaphor on this level for South Amerindians is a very elaborate kind of dualism which I call Dual Triadic Dualism (DTD).

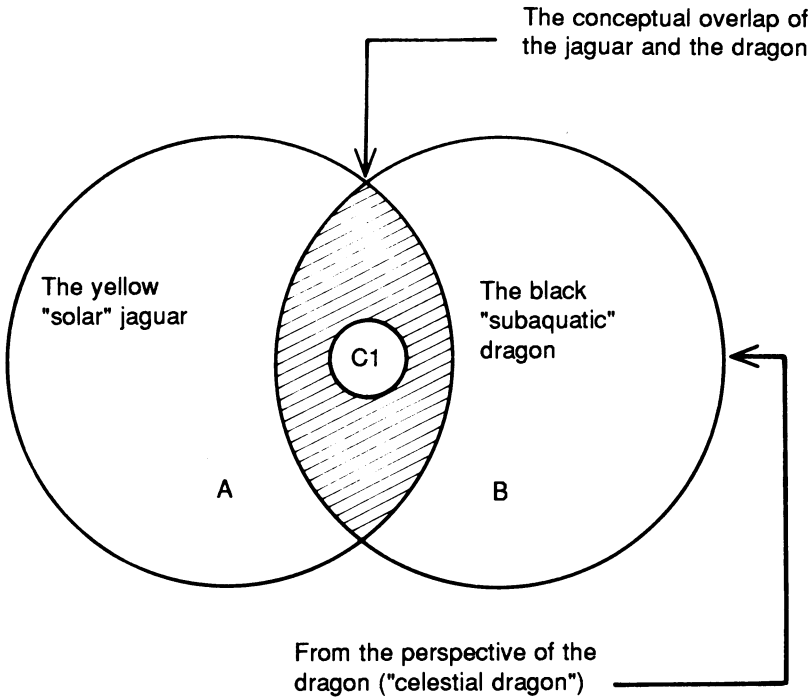
Dual Triadic Dualism is a form of cognitive organization not unique to lowland populations, but for cultural reasons is one that is uniquely *emphasized* there in everything from their technical processes and graphic designs to ethnoastronomy and the verbal art of myth. Dual Triadic Dualism was first identified in the domain of oral literature. Shipibo, Waiwai, and other storytellers manipulate different mythic categories in similar formal ways. In Shipibo origin myths (Roe 1988), characters split into dual categories, which are then overlapped to produce a third category. This is the typical "structuralist shell-game," where a third, "medial" category is created by conceptually overlapping two others. Following Crocker's (1983) discovery of a similar system among the Ramkókamekra Canela of Brazil, I called this "Triadic Dualism." It contrasts with typical Western dualism which is characterized by static, nonoverlapping, dyadic opposition. The latter is used, albeit inappropriately, by Lévi-Strauss (1969, 1973, 1978, 1981) in his important *Mythologiques* to decode South Amerindian myths and by Maquet (1971) in his distinctions of instrumental and noninstrumental forms.

Lowland South Amerindians go even further than triadic dualism, however, by also contrasting *two* of these paired categories, defining DTD (Roe 1988:114). For example, the Dragon and the Jaguar are mythic categories that are typically held in opposition by Shipibo storytellers (Figure 2-8). Using triadic dualism, the narrators overlap the Dragon-Jaguar pair *from the point of view of the Jaguar*, with its solar affinities, and generate a feathered serpent (Figure 2-8a-C1) which flies through the air but is still considered a Dragon—the *Urufiri* of the Waiwai myth. The same narrators can also overlap the Dragon and Jaguar categories *from the point of view of the Dragon*, with its subaquatic affinities, and generate a black, nocturnal animal (Figure 2-8b-C2) that shares the Dragon's aquatic nature but is still considered a Jaguar—the Black or Thunder Jaguar (Roe 1989b:Figure 5).

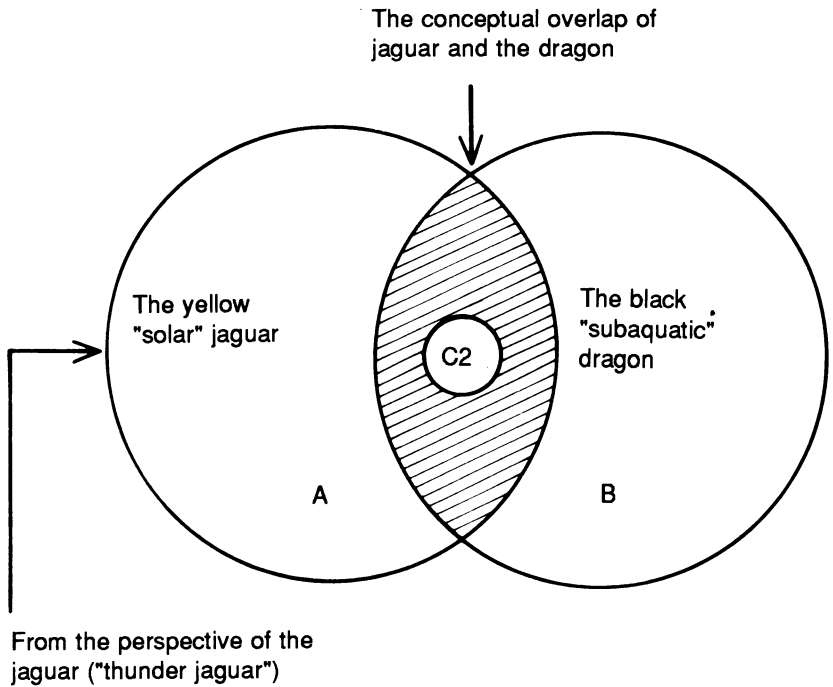
In sum, four categories are generated out of a dyadic pair: the primarily opposed Celestial Jaguar (Figure 2-8a); the Subaquatic Dragon (Figure 2-8b); and the two liminal, overlapping categories, Celestial Dragon (Figure 2-8a-C1) and Subaquatic Jaguar (Figure 2-8b-C2). Thus, simple dualism

Figure 2-7. The thing made (the artifact) and the thing said (the myth) in South Amerindian culture: the armadillo mytheme in Shipibo material and verbal culture. (a) Three views of a chonta palmwood nine-banded armadillo (*yahuish*) carving from San Francisco de Yarinacocha, eastern Peru, in the author's collection. Its masculine-carved form and feminine-designed decoration embody both the segregation of tasks and their ultimate complementarity which are the principal features of the lowland sexual division of labor. (b) A schematic rendering of the Shipibo myth *Panó huëtsa nêtē*, "The Giant Armadillo and [the Discovery of] the Other [lower] World" which annotates the sculpture just as the carving "calls up" the myth. The Ur-world begins with a minimally differentiated universe connected by armadillo burrows and populated by animals that could speak like humans and ends with a triple-tiered, differentiated cosmos with distinct animal and human denizens produced by "devolution" (presumptuous and "heavy" women carrying burden baskets rupture the world ladders and transform into armadillos as they plummet to earth, their element).

a



b



of the kind that has been used heretofore is too simple. Each figure is itself a dualistic entity in simultaneous *internal* opposition and identification with its “opposite.”

This elaborate apparatus allows thought to go from one concept to its opposite using the “bridge” of the overlapping categories. Dual Triadic Dualism produces what Lévi-Strauss has called “chromatism,” the Amerindian tendency to get from concept A to B by making a series of tiny steps via systematic overlaps, like the multiple slight shifts in hue between the bands of color in the middle of a rainbow that bridge the polar shades on each edge. In Figure 2-8, one starts in A, goes to C1, C2, and then reaches B. This is also a *reversible* system, for one can as easily proceed in the opposite direction, from B to A. It is in this context that masculine can become feminine and vice versa, or life/death can become death/life in a biological rather than a mechanical metaphor. The universe becomes alive, a “cosmic zygote” (Roe 1982a).

Dual Triadic Dualism is more dynamic than triadic dualism and much more dynamic than Western dualism. Western conceptual devices, like structuralism, embody static *binary oppositions* such as Good/Bad, Man/Woman, Herbivore/Carnivore, Snake/Bird. They do not allow easy transition between concepts.

In addition, whereas binary static opposition is *symmetrical* dynamic, reversible dualism is *asymmetrical*. That is, the poles to which a medial category is related are *weighted* differentially. Thus, one of the overlap categories of the Dragon (Figure 2-8a-C1) can fly through the sky, a positive domain; however, the preponderance of its symbolism is weighted toward the negative terrestrial and subterranean symbolism of snakes.

Such complex statements are only possible through the complex interplay of multiple dimensions of an entity, or what I call *codes*. Based on Lévi-Strauss’s notion of the “logic of the concrete,” I suggest a primary set of codes based on the senses and ordered in importance according to their frequency of use in the mythic texts: (1) shape, (2) color, (3) position, (4) element, (5) behavioral, (6) culinary, (7) aural, (8) olfactory, and (9) the tactile. In turn, these sensory codes produce, through interaction, various *subject codes*, like the “Avian” and the “Feather Art” codes. These codes interact via what I call *code intersection*, where codes redundantly converge within a symbol net, and *code opposition*. The latter, in turn, can be subdivided into two methods of conflict: *code overriding*, where one takes precedence, and *code overlapping*, which produces medial categories.

Just as the poles of a DTD set can be differentially weighted, so too can these dimensions or codes be assigned different semantic weight in any particular context, and these can shift as contexts change. For example, if the culinary code is predominant in a tale or image about the antisocial connotations of cannibalism, then it can “override” positive “solar bird” attributes so to yield the mytheme/iconographic image of the Cannibal Eagle of Waiwai and Shipibo myth. Unlike the beneficent Solar Eagle, the Cannibal Eagle eats people and thus *must die*.

The concepts defined above comprise a complex analytical system. However, complex cultural images such as those shown in Figures 2-9 to 2-10, which we will examine, can only yield their messages with such powerful techniques.

The Cultural and Material Basis of Dual Triadic Dualism

Independent proof of cultural–cognitive organization at a high degree of generality can be found in parallel distinctions in *several distinct domains of culture*. In South Amerindian cultures, an

Figure 2-8. A schematic representation of “Dual Triadic Dualism” (DTD) as a central cultural metaphor in South Amerindian lowland verbal and visual styles using two dominant animal symbols: the Jaguar and the Anaconda–Caimanic Dragon. (a) The conceptual overlap between the polar symbols of the Yellow “Solar” Jaguar and the Black “Subaquatic” Dragon *from the point of view of the Jaguar* (C1), The “Celestial Dragon.” (b) The conceptual overlap between the Yellow Jaguar and the Black Dragon *from the point of view of the Dragon* (C2), the “Thunder Jaguar.” The model was generated using Shipibo and Waiwai oral texts recorded, transcribed, translated, and analyzed by the author (Roe 1982a, 1989b).

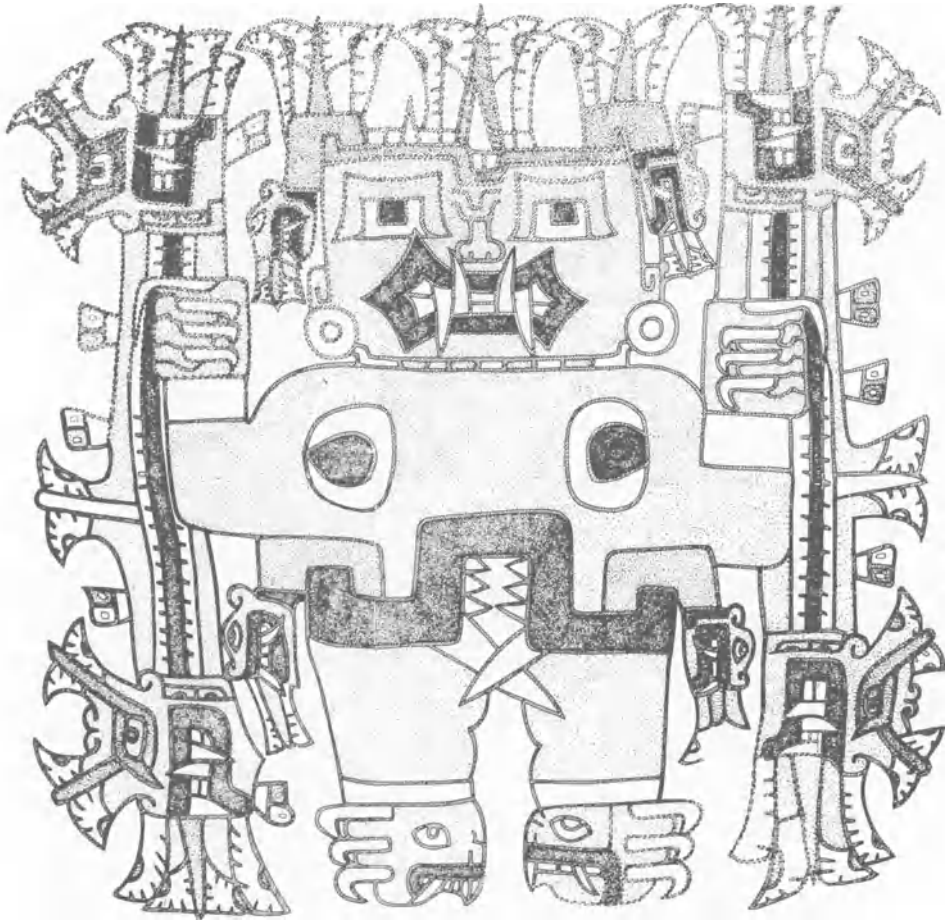


Figure 2-9. Dual divinities in ancient Chavín cotton painted textile art (temple wall-hangings) from Karwa, south coast of Peru. Above: The “Staff Goddess” in frontal view with phytomorphic appendages, breasts “kenned” as eyes, and a vagina dentata. The drawing, based on a tracing, is taken from Roe (1974:Figure 14). Opposite: Male “Staff Gods” from Karwa in three-quarter profile view. Based on a tracing of a textile made available to the author by Alana Cordy-Collins.

overarching bias for what I call *positive–negative play* or *mental ambiguity* can be found in disparate domains. By these terms I mean the shifting back and forth between one element of a pair to another. In the graphic arts (Roe 1980:Figure 8), it manifests itself as the well-documented ability to shift visual attention back and forth from figure to ground. The artist can regard one design as the figure and the background as the frame, or, switch the focus of visual attention to the background and see it as a contrasting figure or design. In mythology and cosmology, it occurs as DTD for anthrotheriomorphic figures and medial categories such as Lower Heavens–Upper Earth. It also is found in ethnoastronomy and textiles.

I argue that mental ambiguity has three sources. First, there is a predisposition to this particular viewpoint in societies that have a style of technological animism, as defined above, and that use certain media. In such styles, representational forms create a reversible figure-and-ground structure of

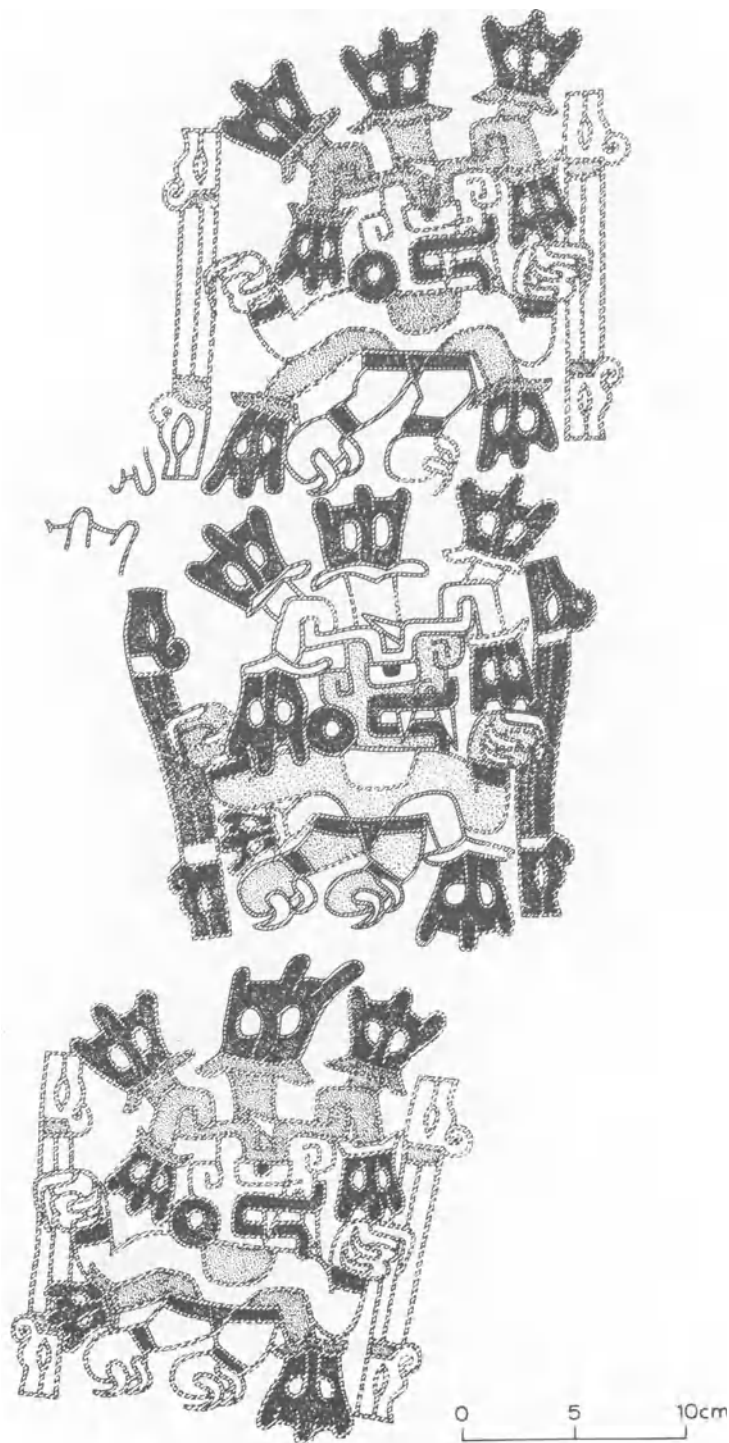


Figure 2-9. (Continued)

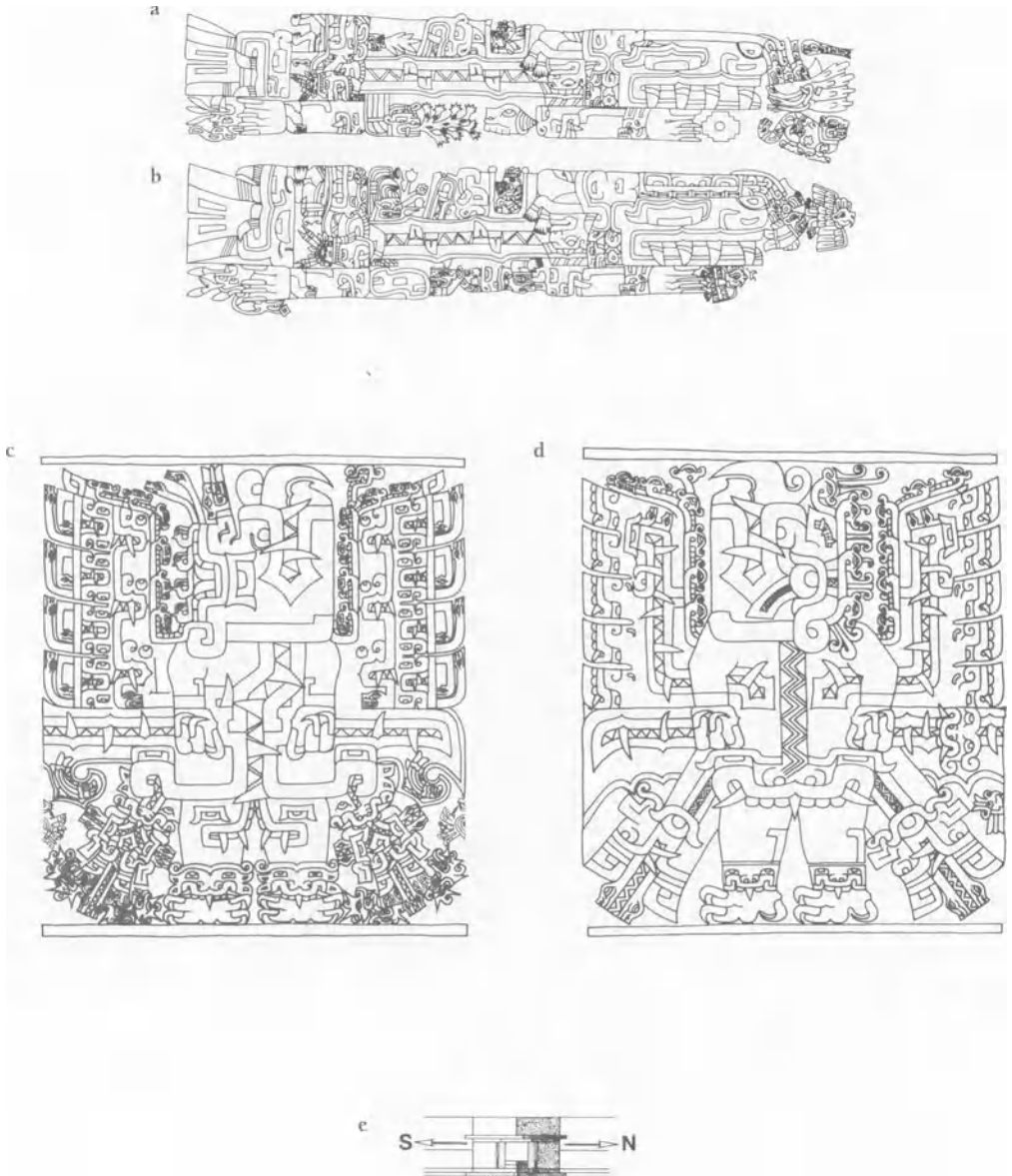


Figure 2-10. The “aesthetic syntactics” of monumental bas-relief architectural stone carving from the cult center of Chavin de Huantar, central Andes of Peru: DTD in stone? (a) A roll-out of the male (as decoded by Lathrap 1973), or upper Dragonic Caiman carved into the “Tello Obelisk” taken from Rowe (1967:Fig. 6). Its phallus is “kenned” as a collared cat-snake. (b) The lower, or feminine Dragonic Caiman (again, à la Lathrap 1973), from the Tello. Its vagina is “kenned” as an eyed volute (seed pod?). (c) A roll-out of the female Harpy Eagle “Guardian Angel” from the south column of the Black and White Portal on the facade of the New Temple (taken from Rowe 1967:Figure 9). Again, note the vagina dentata. (d) A roll-out of the male Hawk “Guardian Angel” from the north column of the Black and White Portal (taken from Rowe 1967:Figure 9). Here the collared cat snake is depicted full-face, its central canine (a nonordinary element of anatomy) “kenned” the phallus. (e) Rowe’s reconstruction of the Black and White Portal in his (1962) version with directional arrows added.

contrasting elements which allows positive–negative play (Figure 2-4c). Certain media also naturally create positive–negative play and encourage the development of DTD. Complementary warp patterning in textiles, twill-weave techniques in basketry, and resist techniques used in painting pottery, wood carvings, or in dyeing textiles are examples. Specifically, if one flips over a two-color, warp-patterned textile or peers inside a twill-weave basket, one sees the figure/ground relationships reversed! What floats onto the exterior surface submerges on the interior surface so as to create a negative version of the exterior design. Thus, the positive techniques of weaving/plaiting are bridged to the negative techniques of resist painting and dyeing. Thus, for these media, the complex mental ambiguity of DTD is a Boasian *resultant pattern* from their visual ambiguity. This does not explain why DTD predominates in South American cultures, for the same properties exist all over the world. However, it does provide an objective material correlate of DTD.

Second, mental ambiguity and DTD can also be a product of cultural definitions of color, or vice versa. For example, in the West, colors are broken down into a static light–dark dyadic opposition: the good guys wear white; the bad guys wear black. In contrast, in lowland South Amerindians, color is defined along two dimensions—hue/chroma and reflectivity/luminance. Thus, there can be light colors that are dark (dull) and dark colors that are light (reflective). Something that is light *and* reflective is aligned with the upper world of the light, reflective Sun. A color that is dark *and* dull is identified with the somber hues of the Lower World and the Moon. However, something that is dark but reflective through its iridescence can be “bright,” and hence classified with the other bright, light colors. Conversely, a dull, light color can be classified with the dark, dull colors.

These two properties have been abstracted simultaneously from the single skin of the anaconda. His dark green and black designs emphasize his Lower World affinities. However, through visual ambiguity, one can also focus on the shimmering iridescent facets of the anaconda’s scales within his dark spots, diamonds, and rhomboids. In this manner, the Dragon is elevated to a more “Celestial” realm. From this “color energy” point of view (Reichel-Dolmatoff 1978a), the iridescent black and green of the anaconda’s skin is as much a bright color as the light yellow and red of the macaw or the brilliant white of the harpy eagle.

A culture that uses color dualistically in this way has by definition a different structure to its visual style than one that does not and is more predisposed to DTD. This difference can lead to more or less stylistic variation and heterogeneity within a region.

Finally, positive–negative play and DTD also are a product of culturally defined modes of perception (see also Washburn, Chapter 4). For example, in tandem to the Shipibo making negative spaces with their lattice designs, they can also lift those negative spaces out of the array, convert them conceptually into positive form-lines, and then start a whole new derivational chain of designs based on those form-lines. This magic conversion of something that was once negative into positive motifs I call background field transformation.

Among the Shipibo, background field transformations also occur on a larger canvas than artifacts. They appear in the huge figures that cover the night sky. In Shipibo ethnoastronomy, unlike European ethnoastronomy, there are many “dark cloud” constellations in addition to star-to-star constellations, just as in the Andes (Urton 1981). These are negative figures produced by the dark spaces within the star fields that compose the Milky Way.

In sum, mental ambiguity is an active conceptual mechanism in several cultural domains: graphic art, verbal art, and ethnoastronomy. This expressive style appears to be based in the predispositions offered by an animistic technology, the behavior of some media, and culturally defined scales of color and modes of perception.

The History and Archaeology of Dual Triadic Dualism

The occurrence of Dual Triadic Dualism among disparate cultures across vast distances in South America argues for its extreme antiquity, perhaps back to the Chavín style of the Formative period.

This ancient animistic style drew its fearsome iconography from lowland megafauna such as jaguars, anacondas, harpy eagles, piranhas, and caiman (Lathrap 1973; Roe 1974, 1982b), which were interpreted via hallucinogenic imagery and animistic shamanism (Cordy-Collins 1980). It spread as a “regional cult” (Burger 1988) some 2,500 years ago as the first unifying force in highland Andean and coastal Peruvian culture and formed the “cultural matrix” of Peruvian civilization until European contact.

The best evidence for Dual Triadic Dualism in Chavín art comes from its monumental stone sculpture, painted cotton wall-hangings, and their architectural context. Chavín art invariably depicts dual male/female manifestations of all principal cult images, such as the Were-Jaguar “Staff Goddesses” (Figure 2-9a) and “Gods” (Figure 2-9b) and the Eagle/Hawk Were-Theriomorphic Guardian “Angels” (Figure 2-10c,d; Lyon 1979). It also employs the dualistic pictorial device of “split-representation.” This was used to depict dual Caimanic Dragons on one of the principal early Chavín cult objects, the “Tello Obelisk” (Figure 2-10a–b; Lathrap 1973) from the type site of Chavín de Huantar. This dualism is of the DTD type. This becomes apparent when one keys the *two* complex images carved on the obelisk (2-10a, b) to lowland codes of logic. The resulting matrix (Table 2-4) shows the smearing or interpenetration of sex-based traits between the masculine and feminine halves of the depiction. Caiman A, the *upper* masculine one, has certain feminine traits while Caiman B, the *lower* feminine one, displays various masculine symbols.

This systematic overlapping of traits is mirrored in later cult images, such as the *pair* of “Bird Guardians” (Figure 2-10c,d) from the Black and White Portal of the new wing of the Old Temple at Chavín de Huantar. A DTD structure is created in this work in three ways. First, many of the subsidiary traits of the male and female figures show the same overlap found in the Tello (Table 2-5). A masculine female figure, a male hawk (Figure 2-10c), and a feminine male figure, a female harpy eagle

Table 2-4. The Tello Obelisk Matrix¹

Code	Male subaquatic dragon (Great Cayman A)	Female celestial dragon (Great Cayman B)	Association ²
Species code—zoomorphic			
(snout prefix 1)	Spondylus bivalve	Harpy Eagle	Anomalous
(snout prefix 2)	Jaguar	Piranha	Expected
(paw prefix)	Stepped roundel	Falcon? ³	Expected
(belly infix)	Strombus	Puma?	Expected
Sexual Code	Phallus kenned as jaguar snake	Uterus kenned as seed pod?	Expected
Shape Code	Pointed, squared (stepped roundels) ⁴	Rounded, curved (uterine symbol)	Expected
Element code— phytomorphic	Achira (tuber) Manioc (tuber) Peanuts? (seed)	Bottle Gourd (seed) Capsicum pepper (seed)	Anomalous Anomalous Expected
Positional code	Water, underground (below)	Sky, above-ground (above)	Anomalous

¹The iconographic DTD Overlap between the celestial and subaquatic caimanic dragons of a Phase C (ca. 500–400 B.C.) prehistoric bas-relief sculpture of the Chavin culture, Peru, decoded with ethnographic lowland Amerindian symbolism: The Tello Obelisk.

²Expected indicates that the iconographic associations of the Tello Obelisk follow current symbolic values taken from the montaña directly to the east. These associations are expected only if the prehistoric iconography was of a simple dyadic oppositional form (e.g., male/female, good/bad). Anomalous indicates that the iconographic associations of the Tello Obelisk do not follow current symbolic values in the montaña. The variable pattern of expected and anomalous correspondence indicates that something more complex than simple dualism is at work. DTD is the probable structure given the overlap of some male and female dimensions of code in the obelisk.

³Question marks indicate designs for which iconographic decoding is ambiguous.

⁴Contents of parentheses provide more specific detail about the entry that precedes them.

Table 2-5. The Black and White Portal Matrix¹

Code	Male falcon guardian (Angel A)	Female eagle guardian (Angel B)	Association ²
Species code—zoomorphic (main figure)	Falcon	Harpy eagle	Anomalous
(appendage)	Simple snake head	Collared jaguar-snake head	Anomalous
(weapon infix)	Jaguar, falcon	Fish	Expected
Sexual code	Breechcloth (phallus kenned as central canine?) ³	Vagina kenned as continuous mouth band (vagina dentata)	Expected
Shape code	Rounded forms (eyes)	Sharp, pointed forms (eyes)	Anomalous
Color code	Dull, dark limestone	Light, bright (rhyolite porphyry)	Anomalous
Positional code	Right hand side (facing portal)	Left hand side (facing portal)	Expected
Directional code	North column	South column	Expected
Artifactual code	Dart	Dart thrower (atlatl)	Expected

¹The iconographic DTD overlap between the hawk and eagle guardians of a Phase D (ca. 400–200 B.C.) prehistoric bas-relief sculpture of the Chavin culture, Peru, decoded with ethnographic lowland Amerindian symbolism: the Black and White Portal Angels.

²Expected indicates that the iconographic associations of the Black and White Portal Angels follow current symbolic values taken from the montaña directly to the east. These associations are expected only if the prehistoric iconography was of a simple dyadic oppositional form (e.g. male/female, good/bad). Anomalous indicates that the iconographic associations of the Black and White Portal Angels do not follow current symbolic values in the montaña. The variable pattern of expected and anomalous correspondence indicates that something more complex than simple dualism is at work. DTD is the probable structure given the overlap of some male and female dimensions of code in the portal.

³Contents of parentheses provide more specific detail about the entry that precedes them. Question marks indicate designs for which iconographic decoding is ambiguous.

(Figure 2-10d), are produced. Second, this overlapping relationship of the figures is extended in their relationship to the material types and colors of the stone lintels that they support (Figure 2-10e). The masculine guardian image, who should be color coded in a light, bright stone, instead holds up a dark, dull limestone lintel. The female guardian, who is suited for a dark, dull stone, instead sustains a light, bright, rhyolite-porphyry-granite lintel.

Finally, both figures display a segregation and complementarity of sex-based traits that are essential for DTD. Defining a segregation, the female Angel holds an “atlatl” —the feminine “seat” of the projectile—in the form of a continuous mouth band and the hook metaphorically kenned (Rowe 1967) as a fish, a female symbol. The male Angel holds the masculine projectile itself, the atlatl dart, as his horizontal staff. Replacing the fish on the male’s weapon, asymmetrically rather than symmetrically, is an elaborate collared-cat-snake head mask that transforms the shaft of the dart into a snake’s long, rigid body. The projecting fangs of the jaguar-snake head can be likened to the sharp projectile point hafted onto the dart; it is the dart’s “tooth,” to employ a common lowland metaphor. This iconographic segregation of traits is significant since each trait coheres with the sex of the being with which the visual symbols are represented. At the same time, the two opposed male and female, hawk and eagle beings are linked in a complementary set of tasks, forming a perfect representation of the sexual division of labor. Together they guard the portal, standing across from each other, but peering in separate directions—the male to the south, the female to the north. They guard the portal with the same weapon, but each with a different part. Moreover, each angel can only use his or her weapon component by combining it with the armament of the opposite sex! One cannot launch a dart effectively without a dart-thrower. It takes two to launch a dart, as well as to procreate. Thus, on all

possible levels, the same message is transmitted: beings and tasks are made different, but their differences are complementary and together they constitute society, whether that be the society of demigods and goddesses, or the isomorphic but less powerful society of men and women.

Thus, the Guardian Angels of the Black and White Portal reveal the same iconographic story as the Tello on the mythic level. Powerful supernaturals are paired and thereby identified with each other, while at the same time they are opposed and therefore distinguished from each other, by being made a different sex. Yet, the associated traits of each sex are syntactically mixed to such a degree that only systematic overlapping of the sort found in Dual Triadic Dualism could explain the resultant integrated pattern of iconographic associations.

On the social level the Guardians are more anthropomorphized, being later in time (Phase D rather than C) than the Tello. This reflects the more “human-centric” social world of an increasingly stratified civilization that had developed when the Guardian Angels were carved. This civilization had evolved out of the more egalitarian animistic roots atavistically referenced in the Tello (Roe 1982b:250).

These ancient monuments reveal the same social underpinnings of style—the sexual division of labor coupled with sexual dependency and antagonism—that one still sees in the lowlands today. The key pair within this DTD is the male/female dyad. The pervasive sexual division of labor current in that region simultaneously places men and women in absolute and complementary dependence on each other in constructing and using any artifact and in subsistence tasks. That division of labor also generates symbolic sexual antagonism which is coded into the sex’s different roles. For example, ancient Chavín females all have vagina dentatas (Figures 2-9a, 2-10c). Also, many of the animal and other natural symbols used in lowland mythology, which acts as a Malinowskian social charter, have opposing manifestations with masculine and feminine connotations (Roe 1982a:165–167).

Perhaps the ancient highland Chavín stonecarvers were saying what the modern lowland myth tellers are still narrating: at the instant that one category is distinguished from another, often by sex, it must also be related to its opposite via enough overlap of traits so that a person can get from one category to the other. As in the profound sexual division of labor that underlies this system, different things (animal symbols, statuses, roles) must be *segregated* from each other via opposition at the same time they exist in *complementary* association. Just as a modern Shipibo man is identified with a sword club and a woman is forbidden to hold one once it is made, so too does he need a woman to complete the weapon. She adds her input by drawing the designs that transform the sword club into a “proper” weapon. So too did a Chavín male were-supernatural guardian-warrior need a woman to launch “his” dart from “her” spear-thrower! The society of gods and humans stand in a divided, but locked embrace.

In sum, one must study social structure to reveal style, but style itself has molded social relations in South America since the Formative Age via the mythic level of animist technology and the structural mechanism of “Dual Triadic Dualism.” Art is not only a passive mirror of society, but a way of constituting it.

CONCLUSION

I have emphasized the following aspects of style. (1) It is about the structure of *patterned variation*. It is a generative grammatical system of *recognizable* and *selected* rules and elements of both form and decoration. (2) Style, as a basic *metaphorical* selection that juxtaposes things not connected before, is fundamental to culture and is expressed in similar ways in multiple domains and many different media. (3) Yet the *medium* itself enters into a dialog with the artist/artisan. Therefore, each medium must be investigated for its conditional effects on stylistic production. (4) Since both technical and aesthetic behaviors often involve the manipulation of materials, the traditional distinction between “art” and “technology” can be bridged by the notion of *style in technology*. There are multiple ways of

achieving any technical solution, not just one “optimal solution.” Moreover, within a particular culture, both art and technology, as well as other domains like ritual and ceremony, may use similar structural principles. (5) In addition to their comparative principles, styles are unique *contextual* units that must be analyzed in terms of their own historical processes. As in any structural study, it is the relationships of the parts of style, not just the elements themselves, that determine the unique configuration of a given style. One relationship is time. (6) These elements are also given differential weight culturally and manifest themselves *hierarchically*.

(7) To study style in both its technical and aesthetic manifestations, the analyst must follow the processual structure of style from the *emic* perspective of the original intent through creation and curation to disposal, following the use-life trajectory of any resulting artifacts. (8) Rather than looking for simplistic “prime movers” in style, the analyst should consider the variables that *synergistically* interact within the context of different *boundary conditions* to affect style during each step of its processual path, and on each of its levels—the psychological, formal, social, and, especially the “mythic” and “structural.”

Just as all “information” in style is not self-evident, so too not every “message” is obvious. The surface structure of a verbal, visual, or performative “text” is not sufficient to illuminate fully the style to which the text belongs. Rather, it is the relationships between things and across media that yield the systemic harmony we call style. This web of relations anchors the tetherless acts and objects on which we have tended to fixate and avoids the premature closure on the “thing” rather than its total life—creation, use, and disposal. Only by considering the full context and trajectory of artifacts can we write meaningful accounts of culture history and process.

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Chapter 3

Style and the Self

JEROME A. VOSS AND ROBERT L. YOUNG

Archaeologists have always had to confront, either directly or indirectly, one issue concerning material culture: the nature, degree, and meaning of stylistic variation. Whereas many archaeologists have defined style in almost static terms as reflecting culture or ethnicity, others have considered style as a dynamic process in social organizational studies. Virtually all archaeological approaches assert that style involves the individual expression of some fashion, taste, concept, or meaning shared within a group. The group may be as small as a coresident family or as large as several culturally related societies. In emphasizing style as a cognitive process centered on the relationship between individual and group, such approaches typically employ some conceptualization of self or identity. Although a few archaeologists have explicitly used the concepts of self and identity in theories of style, most have based their approaches to style on an implicit understanding of these concepts.

The frequency with which the concept of self enters into archaeological explanations of style suggests that this concept needs critical examination. The implicit and explicit uses of the concept are, on the whole, highly simplified. The terms “identity” and “self” are frequently used casually and with poor definition. Also, it is significant that many of the criticisms directed at theories of style demonstrate the problems resulting from the incorrect or incomplete use of the concepts.

This chapter is concerned with explicating the concept of the self and assessing its value for synthesizing archaeological theories of style. The argument is not for a psychological archaeology but rather for the accurate and consistent definition and use of a concept that has previously been treated rather loosely by archaeologists. The benefits resulting from the appropriate use of the concept are substantial for theory development.

The discussion focuses upon four topics: (1) the social-psychological and anthropological understanding of the self; (2) the uses of the concept of self in archaeological theories of style; (3) studies of expressive behavior in other disciplines with relevance to the archaeological analysis of style; and (4) expectations for stylistic patterning. Consideration of these topics forms the basis for a definition of stylistic behavior as an act of individual re-creation. The re-creation is contingent upon general and specific reference relationships, abstract values and ideals, motivation, and competency.

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SOCIAL-PSYCHOLOGICAL AND ANTHROPOLOGICAL VIEWS OF THE SELF

Although various definitions and interpretations of the self appear in the philosophical, theological, and social scientific literature (Johnson 1985), anthropologists have employed three related models of self and identity (cf. Robbins 1973:1205): (1) an identity–health model (Rogers 1961; Erikson 1968) which focuses on the relationship between identity and personal adjustment; (2) an identity–world view model (Hallowell 1971) which emphasizes that a conception of the self is a prerequisite for social and cultural life, and acknowledges cross-cultural variation in the self; and (3) an identity–interaction model (Cooley 1902; Mead 1934; Goffman 1959) which emphasizes the importance of interaction in the formation and maintenance of the self. Cultural anthropological studies typically employ the identity–world view model (Robbins 1973:1201). In contrast, archaeological concerns with style most closely resemble the identity–interaction model, which is particularly appropriate for understanding expressive behavior like style. The following review concentrates upon those dimensions of the self, as conceptualized in the identity–interaction model, which are relevant to style theory.

The Nature of the Self

Robbins (1973:1204–1205) has noted that a great variety of terms have been used in the social science literature to label seemingly similar processes of self and identity. In this chapter, the use of the term “self” stems not only from its emphasis in social-psychological literature, but also from the tendency of anthropologists to use the term “identity” as synonymous with “ethnic identity” (Berreman 1983:289).

In the simplest theoretical sense, the self is an individual's own formulations and theories about being a personal and social entity. It involves two reflexive dimensions: (1) self-as-object, referring to the human abilities to be more or less detached and to evaluate critically one's own attitudes, feelings, and behavior; and (2) self-as-subject/performer, referring to the active processes of thinking and doing (Johnson 1985:93; Hamachek 1987:3–4). In other words, the self is both reactive and proactive. As such, the self significantly influences behavior:

[E]ach person . . . has a relatively stable *self-conception*. . . . Each takes his personal identity so much for granted that he does not realize the extent to which his life is structured by the working conceptions he forms of himself. The things that a man does voluntarily, and in some cases even involuntarily, depend upon the assumptions he makes about the kind of person he is and about the way in which he fits into the scheme of things in the world. [Shibutani 1961:216]

The Reactive Dimension of the Self

The self exists at the intersection of the individual and the group and emerges as a result of social interaction. There is a general consensus that “the self is a social construction which is symbolically and signally created between and among social beings” (Johnson 1985:129). In his notion of the looking-glass self, which pertains to the reactive dimension of the self, Cooley (1902) argues that through interaction with others the individual gains a sense of (1) his appearance in the eyes of others; (2) the others' judgments of that appearance; and (3) a self-feeling based upon the presumed judgments of others. This self-feeling is also tied to the identities attributed to those same others. As Cooley observes, “we are ashamed to seem evasive in the presence of a straightforward man, cowardly in the presence of a brave one, gross in the eyes of a refined one, and so on” (1902:184). In a similar vein, Mead (1934) emphasizes that social behavior is predicated on the ability of individuals to view their own behavior from the perspective of others. Through an awareness of how others would view certain behaviors, the individual can imagine various behaviors and their likely consequences prior to

taking action. Therefore, the individual's concept of self largely depends on the expected and actual responses of others to his or her behavior. This self-concept, in turn, figures into the construction of subsequent behaviors which are then responded to by others in the ongoing cycle of interaction. Throughout this process, the individual's self-concept must accommodate itself to the responses of others; the self is subject to renegotiation at every turn:

[S]elf-conceptions, like most other meanings, are formed and creatively reaffirmed from day to day in the interaction of people with one another. Each person develops some notion of the kind of creature he must be from the regularity with which he is addressed by others with whom he is in sustained association. . . . Each person's sense of identity is constantly being tested in social interaction and constantly reaffirmed as other people live up to expectations. [Shibutani 1961: 239, 243]

The Proactive Dimension of the Self

The presentation of the self to others, a proactive dimension, depends in part on social roles and social context: "a man has as many social selves as there are individuals who recognize him" (James 1892:190). Presenting different aspects of the self is part of an overall process of impression management which is performed because people learn both that it is expected of them and that it is necessary in order to accomplish specific goals. Although social roles provide general direction to behavior (Goodenough 1965), expectations are usually sufficiently ambiguous to allow for a good measure of individual interpretation—each social actor plays her parts in her own unique way. Even with such leeway, however, most impression management takes place in the context of routine role performance, and is thus limited to acts that can be integrated into such performances. Therefore, the role expectations of social categories are at once mechanisms that stifle individuality and the primary media through which such individuality can be expressed (cf. Goffman 1959, 1971; Hamachek 1987:6–7).

Beyond role performance, it is necessary to consider motivation in the presentation of self. Goffman notes that the actor's own situational motives may be integrated into his experience of self: "when an individual appears in the presence of others, there will usually be some reason for him to mobilize his activity so that it will convey an impression to others which it is in his interests to convey" (1959:4). In particular, the individual will often intentionally seek to portray a particular impression of self through both verbal and nonverbal gestures that are designed to influence the other's definition of the situation and evaluation of the participants (Goffman 1967:5). In addition, Goffman uses the term "role distance" to denote behaviors designed to distance the actor from the role currently being enacted. Role distancing is a technique for expressing the actor's unique personal attributes even while adhering to the letter of role expectations. It is a way of saying, "it may be necessary for me to engage in this activity, but I want all who see me to know that there is more to me than just the roles that I am forced to play."

Therefore, an individual's sense of self is not rooted exclusively in the judgments of others. The individual is an active participant in the processes of self-definition. Secord and Backman (1974:528–529) note:

[T]he individual being socialized is not a passive object being molded and shaped by persons who are older, more powerful, wiser, and more experienced. Even casual observation of small children reveals that they are not so easily molded in this fashion. . . . The individual is not passive, but is an active agent in maintaining a stable, interpersonal environment.

This brief summary should suffice to point out the dynamic, flexible, and multidimensional nature of the self. Our sense of who we are at any given moment is a function not only of the social structural position we occupy, but also of the social identities we attribute to those with whom we interact, the responses of those individuals to us, and our own motivation and ability. According to this view, the self is composed of social categories and evaluative attributes. Both influence our

behavioral choices, including our stylistic behavior, and our evaluations of the responses that others give to our behavior.

Most fundamentally, the self is a process through which the individual seeks to reconcile social expectations with personal desires, inclinations, and abilities. It involves both the motivated management of impressions and adherence to the expectations of others. The individual actively constructs a self through role interpretations and, at times, through role distancing. The experience of the self is, therefore, clearly multidimensional; it "is *not* totally derivative of or reflective of personality structure, nor is it reducible to an analysis of the social structure in which an individual participates" (DeVos, Marsella, and Hsu 1985:3).

The Universal Applicability of the Concept of Self

Although motivations for interaction between the self and the group may vary, such interaction is universal. There is an intersection everywhere between the single human and the group. Drawing upon the work of Hallowell (1971), Lock (1981:19) argues that:

[T]he concepts of *self* and *culture* are interdependent: one cannot exist without the other. Thus, while it has become commonplace to regard the self as a cultural product, and enquire as to the "environmental" (cultural) factors that lead to the expression or inhibition of this or that aspect of the self, we must not forget the reverse perspective; that culture itself is a product of the self. Selves are constituted within culture, and culture is maintained by the community of selves.

Basic to this universality of the self is language: "all languages must provide deictic markings if they are to be humanly serviceable. Personal pronouns, kinship terms, and personal names all function to this end" (Lock 1981:24). In addition to this linguistic self-orientation, language also provides for the self an object-orientation (cf. Bronowski 1978:36–39) and a spatial–temporal orientation through the use of place names (Hallowell 1971:91–95; Lock 1981:24). These orientations, along with culturally prescribed motivational and normative orientations, are emphasized in widespread rituals that, among other functions, define and emphasize the relationship between the person and the larger society during major individual status transitions (cf. van Gennep 1960, Turner 1969).

Although the self appears to be universal, the vast anthropological and social-psychological literature on the self and identity demonstrates that the definition and understanding of the content of the self clearly vary cross-culturally (cf. Heelas and Lock 1981; Schweder and Bourne 1982; Blacking 1983; Jacobson-Widding 1983; Marsella et al., 1985). Particularly interesting are the numerous examples of cultural perceptions of the self that are much more interactionist than either the Western folk perception which strongly emphasizes individuality, or the Western psychological perspective which, although interactionist, implies egocentric motivation. For example, Hsu (1971, 1985) notes that the Chinese concept of *jen* ("man") "is based on the individual's transactions with his other human beings" (1985:33). Geertz (1975:50–51) emphasizes that, in Bali, there is:

[A] persistent and systematic attempt to stylize all aspects of personal expression to the point where anything idiosyncratic, anything characteristic of the individual merely because he is who he is physically, psychologically, or biographically, is muted in favor of his assigned place in the continuing and, so it is thought, never-changing pageant that is Balinese life. . . . What is feared is that the public performance to which one's cultural location commits one will be botched and that the personality (as we would call it but the Balinese, of course, not believing in such a thing, would not) of the individual will break through to dissolve his standardized public identity. When this occurs, as it sometimes does, the immediacy of the moment is felt with excruciating intensity, and men become suddenly and unwillingly creatural, locked in mutual embarrassment, as though they had happened upon each other's nakedness.

A concept of self, depending at least in part on the interaction between the person and the group, appears to be an essential part of culture (cf. Hallowell 1971:83). Although its recognized content

clearly varies, the self is a concept that may be fruitfully employed in cross-cultural research and should be useful, therefore, as a heuristic concept in archaeological theory.

ARCHAEOLOGICAL CONSIDERATIONS OF SELF AND IDENTITY

The quest for an archaeological theory of style has produced a dialogue of theoretical statements, critical responses, and explanatory revisions. The components of this dialogue have often employed some conceptualization of the self, usually implicit and frequently incomplete. This criticism could be extended to the delineation of archaeological "cultures" on one extreme and the analysis of individual motor habits (cf. Hill and Gunn 1977) on the other. The focus here, however, is on how the concepts of self and identity have been used in the major approaches to understanding stylistic variation as a social phenomenon. These are social interaction theory, information exchange theory, structural theory, and the synthetic approaches emphasizing linkages between theories. In addition to discussing the use of the concept of self in these approaches, we must also examine some of the critical responses to the various major theories. These criticisms frequently direct attention, again implicitly, to the failure of theories to employ a complete conceptualization of the self.

Social Interaction Theory

Probably the most commonly employed approach to explaining and understanding stylistic variation is explicitly interactionist: "the aspect of style concerned, the rate of diffusion, and the directions and limits of diffusion will be conditioned by the kind, frequency, and channeling of interaction among the producers of the stylistic material" (Whallon 1968: 223). This principle, that design distributions reflect interaction direction and intensity, was the foundation for the "ceramic sociology" studies of the 1960s and 1970s (Deetz 1965; Whallon 1968; Hill 1970; Longacre 1970; Engelbrecht 1974) and strongly influenced numerous subsequent studies (e.g., Voss 1977). The social interaction theory predicts (1) that the degree of stylistic similarity between communities, households, and individuals will vary inversely with physical and social distance; and (2) that the diversity of styles within a region will diminish with increasing intraregional interaction.

Social interaction studies rarely equate style explicitly with the self or identity. Emphasis is placed instead on the process of learning in the normative sense: individuals exhibit similar styles because they possess common mental templates acquired through interaction. With its emphasis on communication and learning, however, the social interaction theory implicitly recognizes the impact of social relationships on the self and, therefore, on style as a process of self-definition. Just as folklorists have recognized that the maintenance of oral literary style depends ultimately on small-group interaction (Ben-Amos 1972:13), so the social interaction adherents emphasize the significance of small group interaction in the maintenance of artifact styles.

The social interaction theory has been the target of considerable criticism (cf. Plog 1976, 1980; Braun 1977; Wobst 1977; Hill 1985). Concerns have been expressed about its emphasis on learning and enculturation in isolation from social context and process (Braun 1977:123; Wobst 1977:318) and about its failure to consider style as actually functioning within a society rather than simply reflecting social organization (Hodder 1982b). Finally, the theory has not been consistently successful in predicting the distribution of stylistic attributes. Studies of prehistoric American ceramics (Braun and Plog 1982; Plog 1976, 1980) demonstrated an absence of any relationship between inter-assemblage distance and the degree of stylistic similarity. Hill summarizes the thrust of the criticism, stating that interaction probably plays a minimal role in the explanation of stylistic variability (1985:366) and that:

[S]ocial interaction cannot explain stylistic variability and change because "interaction" is simply the means by which stylistic ideas are diffused—and diffusion alone never accounts for adoption or

nonadoption of any cultural trait. There are independent material reasons for why traits, including elements of style, are adopted or not [1985:382].

These criticisms stem from the incomplete characterization of the self that is assumed in social interaction theory. The theory assumes a static, or at most reactive, self. Braun's complaint that "homogeneity in decorative behavior is highest among persons who make pottery together, *regardless* of where they learned the craft" (1977:123) is an affirmation of the dynamic, rather than static, nature of the self. Likewise, the failure of interaction theory to predict with consistency the distribution of stylistic attributes results from an emphasis on the impact of social relationships on individual behavior and a corresponding absence of concern with what a person may be trying to do proactively with a design. Behavior does not simply reflect interaction, but may involve the attempt to project specific images. The motivated use of style may result in stylistic distributions quite different from those expected solely as a product of the contexts of learning (cf. Friedrich 1970; Voss 1982).

Information Exchange Theory

Recognition of the limitations of the interaction approach led to a major reassessment of style during the 1970s. In his analysis of fluted point variation at the Lindenmeier site, Wilmsen defines style as the "material expression of social distinctions between groups" (1974:93; cf. Wilmsen 1973; Wilmsen and Roberts 1978:179). This definition anticipates one paper (Wobst 1977) that has been cited very frequently in archaeological considerations of style. Wobst argues that style is that part of formal artifact variability that is related to the functioning of artifacts in information exchange within social systems. In a real sense, the information exchange proponents (Braun 1977; Wobst 1977; Conkey, 1978, 1980; Plog 1980; Braun and Plog 1982) have attempted to resolve the problems of the interaction theory by focusing on what Wiessner has labeled as emblematic style: "formal variation in material culture that has a distinct referent and transmits a clear message to a defined target population" (1983:257).

This focus on information transmission emphasizes the proactive, motivated construction of the self and attendant behavior. The types of messages that Wobst (1977) defines as appropriate for stylistic transmission (emotional state, status, ownership, affiliation, religious and political objectification) are, by and large, statements of self, either presented or reflected.

The application of the information exchange theory has involved a more explicit use of the concepts of self and identity:

[D]ecorating, in fact, may be viewed as but one of many types of activity which, through their visibility, constantly transmit information about individual social identities to the participants in a network. . . . Such forms of communication make social intercourse more predictable, by reducing uncertainties about social identity relationships (*sensu* Goodenough 1965) among directly interacting parties, and by providing clues to expected patterns of behavior [Braun and Plog 1982: 510].

Likewise, Conkey (1978:74) argues that the artistic developments of the Upper Paleolithic may be understood as a process promoting sociocultural integration and differentiation at a time when cognitive evolution, including increasing consciousness of self, enhanced the role of the individual and made the relationship between individual and society more problematic.

The information exchange theory has been fruitfully applied in a number of studies, meeting with success not only in predicting prehistoric design distributions, but also in explaining changes in design distributions and variability (Braun 1977; Plog 1980; Braun and Plog 1982; Voss 1982). However, this approach has also had its critics. Sackett criticizes the theory because it emphasizes conscious message transmission. He asserts, instead, that most of the style we observe is passive (1985:157). Hill (1985) argues that Wobst's very particular definition of style is too limited and that there may be components of stylistic variability that do not function in information exchange.

Hodder makes several important criticisms. First, the information exchange approach avoids the specific meanings that are developed within a society for symbols and styles (1982a:177). Second, the theory's emphasis on transmission of information to socially distant individuals inhibits recognition of stylistic behavior within residential units (1982a:193; 1982b:205). Finally, and most important for this paper, Hodder argues that Wobst's "highly functionalist stance does not allow for symbols to act back upon society within an ideological framework" (1982a:192).

Voss (1982:42–43) has argued that a wholesale dismissal of the interaction theory in favor of the information exchange theory is inappropriate. Stylistic analysis of the distribution of design attributes in assemblages of Neolithic TRB pottery in northwestern Europe demonstrates that certain design features are distributed in conformity with predictions of the information exchange theory, whereas other attributes on the same vessels are distributed in accord with predictions of the social interaction theory (Voss 1982).

In fact, the information exchange theory rests on the process of interaction, albeit with an emphasis on the function of style within interaction rather than on style as simply reflecting interaction patterns. Braun (1985:4) recognizes the importance of this point:

[W]e need to acknowledge that decoration, as personal expression, will occur only on objects that other people can see. Feedback to the owner/artisan in the form of other peoples' reactions to decorative expression, in fact, must take place for there to be any social constraint on the decorating behavior.

Neitzel (1985:1) has succinctly moderated criticism of the social interaction theory, noting that "while a great deal of discussion over the past two decades has centered on defining precisely what is meant by the term style, . . . few would deny that this behavior reflects in some way the kinds of interactions which occur among people."

Extending these criticisms of the information exchange theory in terms of the self, it is particularly intriguing that Wobst's model of the target groups for stylistic behavior (1977:325, Figure 1) and Hsu's model of the self in relationship to the larger society (1985:28, Figure 2.1) are illustrated with virtually identical diagrams (see Figure 3-1). It is, of course, true that concentric zone diagrams are by no means unusual in social scientific modeling of the relationship between segments of society. Likewise, the employment of similar diagrams is not proof of model congruence; however, the similarity is instructive. According to Wobst (1977:325–326), the target group for stylistic messaging consists of individuals who are socially distant but who have the opportunity to receive the message and are able to understand its meaning. This target group corresponds to Hsu's definition of operative society and culture (1985:30):

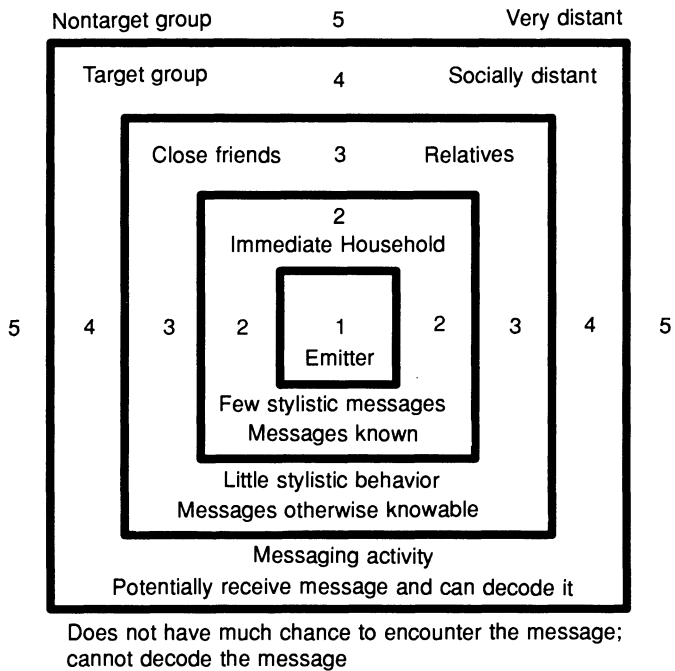
[T]hat is to say, here are found humans, ideas, and things which the individual finds useful. . . . Each of these and other relationships have at least two or more role players. The performance of roles does not demand or imply intimacy or affect. The role occupants sometimes communicate with each other to such a limited extent that a crisis of communication is said to develop.

It is precisely this crisis of communication that stylized behavior is intended to transcend, as Wobst recognizes.

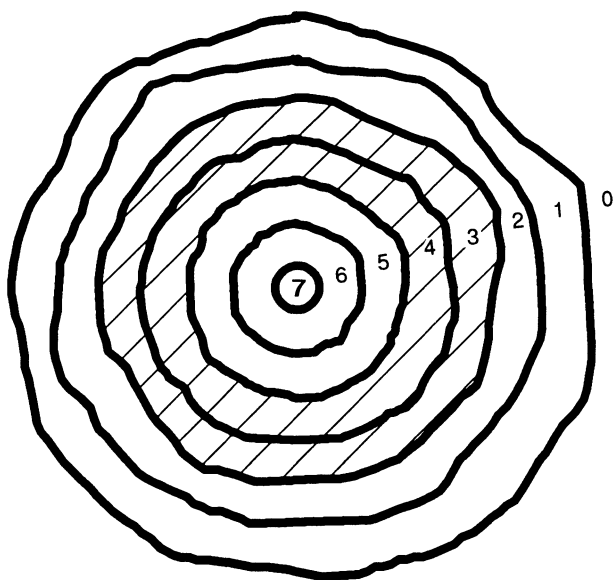
If Wobst's model encompasses Hsu's defined relationship between the individual and operative society, at the same time it overlooks an important relationship at another level: the interaction between the expressible conscious (Hsu's layer 4) and intimate society and culture (Hsu's layer 3):

[L]ayer 4 is termed "expressible conscious" since it contains materials, ideas, and feelings which the individual does communicate to his fellow human beings and which are responded to by them, often as a matter of course. . . . Layer 3 is that part of the external world with which each individual has strong feelings of attachment, which often seem to people of other cultures irrational. It contains, first, human beings with whom he stands in a relationship of intimacy [Hsu 1985:29–30].

a



b



- 7—Unconscious
- 6—Preconscious
- 5—Unexpressible conscious
- 4—Expressible conscious
- 3—Intimate society and culture
- 2—Operative society and culture
- 1—Wider society and culture
- 0—Outer world

Criticisms of the information exchange theory stem from Wobst's failure to include in his theory processes corresponding to these relationships between layers 3 and 4. In particular, in these more intimate interactions are to be found (1) the cultural- and individual-specific meanings of symbols (cf. Hodder 1982a); (2) the manipulation of style within residential units (Hodder 1982a); (3) the passive impact of enculturation in decorative behavior, described by Sackett (1985:157); and (4) the more active feedback component of enculturation (Braun 1985:4).

Therefore, like the social interaction theory, the information exchange theory suffers from an incomplete characterization of the self. Information exchange proponents tend to downplay small-group interaction patterns that, as demonstrated in numerous studies (e.g., Bunzel 1929; Friedrich 1970), clearly affect stylistic behavior. The inability of both theories to explain stylistic patterns with consistency results from such incompleteness. In more positive terms, however, each theory does embrace a major component of the self, either reactive or proactive.

Structural Theory

A third component of the self is present in structural theory: the specific context of the self and its implications for meaning. In archaeological studies of style, structural theory emphasizes symbolic meanings, an active role for style and symbol, and contextual relativity. Style is understood as just one expression of structures that are defined variously as "codes and rules according to which observed systems of interrelationships are produced" (Hodder 1982c:7) and as "systems of relations that can apply to different content areas, e.g. language or any number of actions or behaviors" (Conkey 1982:117). According to this view, structures are brought into material existence through the manufacturing process (Conkey 1982:116). On the basis of ethnographic studies, Hodder concludes that "each aspect of material culture data . . . can be interpreted in terms of common underlying schemes. These structures of meaning permeate all aspects of archaeological evidence" (1982b:212).

Structural theorists posit a very active role for style and symbol. Central to the argument is the motivation for social intercourse. According to Hodder and relevant to the self, style is "the particular way in which general principles of meaning are assembled and reorganized in a local context as part of the social strategies of individuals and groups" (1982b:205). Braithwaite (1982:80) notes that "symbols and systems of symbols have the capacity not only to express and communicate, but also to guide and effect action." She (1982:81) emphasizes the role of communication in maintaining an established social order. Hodder (1982b:185) argues that his ethnographic studies of the Nuba demonstrated that

[T]he extent to which cultural similarity relates, for example, to interaction depends on the strategies and intentions of the interacting groups and on how they use, manipulate and negotiate material symbols as part of those strategies.

Although based upon different assumptions about the source of behavioral patterning, the similarity of these arguments to the concept of the motivated, proactive self is striking. As discussed previously, the presentation of the self involves situational motives in which the individual attempts to convey a particular impression of self that is in her interest to convey (cf. Goffman 1959, 1967). This aspect of the self certainly appears to coincide with Hodder's argument that "art is produced within social constraints to have social effect" (1982a:177). So, although structural theory focuses on the presentation of code rather than the presentation of self, the emphasis on motivated impression management and personal interpretation of specific contexts is quite consistent with models of the self.

Therefore, like the information exchange theory, the structuralist approach implicitly embraces

Figure 3-1. A comparison of (a) Wobst's (1977:325, Figure 1) model of the target groups for stylistic messages; and (b) Hsu's (1985:28, Figure 2.1) model of the levels of individual-societal interaction.

the proactive dimension of the self. The two approaches differ, however, with respect to both the context in which the self performs and the motivation for the performance. Emphasizing the importance of transmitting information about the self, Wobst (1977) focuses on style as mediating relationships between socially distant individuals. In contrast, the structuralists place stylistic behavior within local contexts, emphasizing the situational relativity of styles and stylistic meanings. The implied motivation is less on the transmission of information than on the social and ideological impact of symbols. Both approaches are consistent with the model of the self in that the proactive dimension involves both the performance of social roles and the influence of specific situational motives.

Although structural approaches in anthropology have been criticized (cf. Hodder 1982c:8–9), these criticisms are generally less relevant to the issue of style as a process of the self than are the criticisms that have been directed at the other theories of style. One criticism of structural studies has been that they often minimize the contributions that individuals make in both the generation of behavior and the reinterpretation of cultural patterns—a problem recognized by Hodder (1982c:8; see also Rosenthal, Chapter 10). In structuralist approaches to style, however, the implicit concept of the self provides a mechanism through which cultural codes, in whatever way these might be defined, are interpreted and expressed by individuals. This, incidentally, suggests that archaeologists should expect dimensions of stylistic behavior that are neither exclusively individual nor directly expressive of cultural codes.

In addition, the concept of the self implies the necessity of moderating the potentially problematic relativism of the structural approach. Hodder emphasizes that “styles may well express and justify ethnic differences, but the manner in which they do this can only be understood by examining the structures of symbolic meaning” (1982b:205), adding that “the interpretation of each set of material culture data is unique” (1982b:215). Although few anthropologists would deny that the specific meanings attached to expressive behaviors promote their uniqueness, the influence of the self on expressive behavior can be considered independent of content. Paraphrasing a statement cited previously in this paper (DeVos et al. 1985:3), stylistic behavior is not reducible to the social organization in which individuals participate nor is it totally derivative of or reflective of specific symbolic structures.

Synthetic Approaches

A number of approaches to style have attempted to synthesize aspects of other theories and, in so doing, have incorporated both the reactive and proactive components of the self (Voss 1980, 1982; Wiessner 1983, 1984, 1985; Carr 1985, Chapter 7). In an approach focusing explicitly on style as a function of the self, Wiessner states that style is “formal variation in material culture that transmits information about personal and social identity” (1983:256). She emphasizes the process of individual motivation to differentiate the self from others. Her division of style into *emblemic* and *assertive* components is a significant recognition of the nature of the self as it affects stylistic behavior. Drawing upon Wobst’s (1977) argument, Wiessner argues that emblemic style has a distinct referent to group membership and transmits a clear message about the individual’s group identity (1983:257). Assertive style, on the other hand, is style which “is personally based and which carries information supporting individual identity, by separating persons from similar others as well as by giving personal translations of membership in various groups” (Wiessner 1983:258).

This latter conceptualization, however, is incomplete in terms of the social-psychological understanding of the self. In noting that the social interaction approach to style is very similar to her assertive style, Wiessner claims that such style “has no distinct referent as it supports, but does not directly symbolize, individual identity and may be employed either consciously or unconsciously” (1983:258). She claims that it is this absence of a referent that gives assertive style the potential to diffuse and to be a measure of personal contact.

This interpretation is inaccurate. As noted previously, social role expectations are typically ambiguous, permitting individual interpretation. Such individuality, however, is usually constrained by the need to integrate assertive behavior into acts of routine role performance. Moreover, it is within the context of the small group that the individual learns the dimensions of role behavior. Therefore, there is a referent for assertive style, which consists of neither the broader social groups nor the norms, values, and goals assigned to emblematic style. The referent is the small group and its interactions—Hsu's layer 3. Obviously, assertive style could not reflect interaction, or anything else for that matter, if there were no referential basis for it.

This latter point is reinforced by Sackett's (1985) criticism of Wiessner's approach. In developing his concept of isochrestic variation, Sackett (1985:157; cf. Sackett 1982) recognizes that style is the product of processes of choice within small groups, but argues that it is primarily passive and "dictated largely by the craft traditions within which the artisans have been enculturated as members of social groups." However, it is particularly interesting that in completing the referential basis for Wiessner's assertive style, Sackett's own conception of the "iconography of the commonplace" actually demonstrates that style is not always passive: "consistency of actions provides the means by which members of a group express their mutual identity, coordinate their actions, and bind themselves together" (1985:158). Again, in both theory and critical response, there is the clear implication of the complex nature of the self.

Another theory that has explicitly employed the concepts of self and personal identity is Carr's synthesis (1985, Chapter 7; Carr and Rosenthal 1986). At the heart of this theory is the argument that there is a hierarchy of behavioral processes that can be assigned to formal attributes. These processes include the constraints imposed by the technology and raw materials of manufacture, and a variety of processes that pertain to the self: active signaling of cultural affiliation, social identities, social roles, and personal image; and passive reflections of social affiliation and individuality as a product of enculturation and motor habits. The hierarchy of processes is definable materially, in terms of formal attributes, using four reference hierarchies: a hierarchy of manufacturing decisions, one of execution steps, one of attribute visibility, and a hierarchy of the spatial distribution of attribute states. The four reference hierarchies correlate with each other and, in combination, allow the researcher to assign potential behavioral meanings to artifact attributes.

Carr and Rosenthal (1986) and Carr (Chapter 7) have argued that there are clear relationships between the position of a formal attribute defined by the visibility, decision making, execution, and geographic hierarchies, on the one hand, and the behavioral processes that the attribute reflects on the other. However, the relationships are overlapping and multiple rather than exclusive and determinant. For example, attributes of any degree of visibility can carry information that is useful for purposefully projecting personal messages, in contrast to social ones. Also, highly visible attributes have the potential to reflect a broad range of factors: technological, socially active or passive, or active personal factors. (See Carr, Chapter 7, for further details).

One reason for this indeterminate relationship between form and process pertains to the motivations associated with the self. An indeterminate relationship exists between the features that inspire the manufacture of an artifact and their position in the visibility, decision-making, or manufacturing execution step hierarchies. Inspirational features—creations of the self—can belong to any level of these hierarchies (Carr 1985:20–21, Chapter 7). Thus, traits of secondary decision, execution, and visibility levels can have motivational primacy. For example, the inspiration for making an article of clothing might not relate directly to a primary manufacturing decision or step, such as deciding on the type of garment or its color. Rather, the motivation might involve what would usually be a secondary or tertiary decision, such as selecting a specific stitch pattern appropriate to an occasion or selecting accessory decorative items, such as pearl buttons on a shirt. Even motor habits might achieve primacy in the motivational process, as handwriting practice papers in elementary schools would seem to indicate.

Thus, the use of the concept of the self, albeit very appropriate, upsets what would ideally be a

precise, parallel relationship between an attribute's behavioral meaning and its position in the several hierarchies. Assigning behavioral meaning to any stylistic attribute is hindered by individual variation in motivation, inspiration, and competence. The self may inject itself at any point in artifact manufacture.

However, as with all expressions of the self, this individuality is constrained because stylistic behavior must typically be integrated into the performance of social roles and therefore will have a dimension of predictability. It is also limited by any visual requirements for communicating messages stylistically at a distance. Just as the self is built upon constrained individuality, so "stylistic variation is best considered as *constrained indeterminacy*, rather than the predictable phenomenon originally envisioned by Wobst or the historically particularistic phenomenon concluded by Wiessner and Hodder" (Carr and Rosenthal 1986:3).

Summary

This review of thought on the meaning and analysis of stylistic variability in the archaeological record demonstrates that some conceptualization of the self has typically been employed in archaeological theories of style. Approaches such as the social interaction theory and information exchange theory have been successful to the extent that each has emphasized one aspect of the self with relevance to certain dimensions of stylistic variability and design distributions. Likewise, as the critics have so often implicitly recognized, many of the theories of style have been unable to explain stylistic variability with consistency because of the lack of a comprehensive conceptualization of the process of the self within society. Only in certain recent theories has the self been explicit and used in a manner at all consistent with its social-psychological meaning. The recurrent emphasis on the self in earlier theories and its more complete use in recent syntheses is a clear indicator of the central importance of the concept in explaining style—not as a psychological process but as a process informing on major social and cultural dimensions.

THE SELF AND STYLE: CONTRIBUTIONS FROM OTHER DISCIPLINES

It should not be surprising that other disciplines have examined problems similar to the archaeological concern with style. Of particular interest are sociological studies of expressive behavior, ethnographic descriptions and analyses of art and style, and theoretical developments in folklore. These contributions support the contention that style is a process of the self and direct attention toward the self as a theoretical point of synthesis for the different theories of style in archaeology.

Sociological Studies of Expressive Behavior

There is, as would be expected, a substantial history in sociology of studies that relate the concept of the self to expressive behavior such as style. Many of these studies have focused on dress, which Goffman considers as part of an individual's "identity kit" (1961:20). Although several investigators emphasize a relationship between dressing behavior and personality characteristics (e.g., Aiken 1963; Rosenfeld and Plax 1977), others specifically consider clothing as communicative and as reflective of the self. For example, Compton concludes that her study of the selection of clothing design characteristics by college students supports "the concepts that the self is expressed through one's selection of clothing fabrics and that clothing items play a role in helping the individual conform to an ideal self" (1962:194; cf. Taylor and Compton 1968).

Stone, noting that earlier theoretical formulations of symbolic interactionism emphasized verbal communication in establishing and maintaining the self, similarly argues that "the self is established, maintained, and altered in social transactions as much by the communication of appearances as by

discourse" (1962:118). On the basis of interviews conducted in a midwestern American city, Stone (1962:101–102) anticipated Wobst's (1977) later notion of the messages transmitted by style, but uses specifically social-psychological terms:

[B]y appearing, the person *announces* his identity, *shows* his value, *expresses* his mood, or *proposes* his attitude. If the meaning of appearance is "supplied" by the reviews others make of one's appearance, it is established or consensually validated . . . by the relative coincidence of such reviews with the program of the one who appears. . . . In appearance, then, selves are established and mobilized. As the self is dressed, it is simultaneously addressed, for, whenever we clothe ourselves, we dress "toward" or address some audience whose validating responses are essential to the establishment of our self. Such responses may, of course, also be challenges, in which case a new program is aroused.

Two other studies consider different components of the self, providing support both for Stone's argument of appearance as a self process and for the social interaction and information exchange theories of style. Hoult (1954) asked students to use a social prestige scale to evaluate individuals in photographs. He found that clothing was not significantly associated with the social rating if the student was acquainted with the individual in the photograph, but clothing was strongly related to the rating if the student did not know the person depicted. Although these results clearly support the importance of cultural styles in information exchange, the specific choices in personal dress styles result from small group interaction. In a study of secondary school students in a Michigan community, Vener and Hoffer found that "those persons with whom an adolescent interacts on a personal, intimate basis, exert relatively greater influence upon his clothing behavior than those with whom his interaction is of an impersonal, more formal nature" (1959:28).

Ethnographic Descriptions of Art and Style

Although it is beyond the scope of this paper to review the range of cultural anthropological studies relevant to understanding style, there are numerous ethnographic accounts of specific types of artistic behavior that bear on the implications of the self in understanding style. An example is Bunzel's study of pottery making in Pueblo communities (1929), a regularly cited source in archaeological considerations of style. While documenting the significance of interaction in both learning and transmitting designs (1929:51–64), Bunzel also illustrates the individualistic motivations involved in the production of pottery designs. She notes that "there is everywhere a considerable amount of conscious borrowing of designs among villages" (1929:57). Yet, despite this borrowing, Bunzel argues that there is a conscious attempt to make pottery manufacturing an individual experience:

[T]o say, "We paint our thoughts," is common in the villages where designs are clothed with symbolic meaning. But even where symbolism plays no role in decoration, as for instance, among the Acoma and the Hopi, there is nevertheless a strong feeling that each pot is an individual and a significant creation. The condemnation of copying the designs of other women was unanimous [1929:52].

Insistence on originality by the potters indicates, at least in this example, the relevance of the self in mediating cultural expectations and personal motivation.

Another regularly cited ethnographic study, Hardin's analysis of Tarascan painted pottery (Friedrich 1970), illustrates dimensions of stylistic behavior that are consistent with the model of the self—particularly the model's ability to be a point of synthesis for the social interaction and information exchange theories of style. Hardin demonstrates that, in the Tarascan case, certain components of design are widely recognized and diffuse rapidly, making them poor indicators of specific interaction patterns. Other components of designs on the same vessels are not part of a recognized design structure and, Hardin argues, are good indicators of interaction (Friedrich 1970:337–339). Although the specific types of designs that indicate the different behavioral levels are

probably specific to the Tarascan case, Hardin's analysis nevertheless provides further support for considering stylistic behavior as a process of the self: archaeologists should anticipate stylistic attributes that reflect both group membership and individuality.

Ethnographic accounts of body decoration are also significant. For example, Faris documents that the motivation for Nuba body decoration is mainly aesthetic, but the decorations also signal important status dimensions: age group status, patrician membership, ritual status, and physiological condition (1972:21–45; cf. Wobst 1977). Faris also notes that although designs considered poor are rarely produced, there is variability in individual competence in body decorating. Individuals judged to be less talented or simply doing a poor job are subjected to ridicule and lecturing about appropriate technique. Small-group interaction is, therefore, as important in maintaining styles as is the need to project certain messages.

Strathern and Strathern (1971) emphasize similar points in their analysis of body decoration in Mount Hagen. Noting once again that body decoration functions to transmit specific messages about social status, emotion, and personal qualities, the Stratherns draw a conclusion immediately understandable in terms of the social-psychological model of the self: "although the dark elements in their decoration are meant to disguise them, their aim is not impersonation of some other identity but aggrandizement of their own" (1971:171). Supporting a central argument in this paper, the Stratherns (1971:172–173) conclude that:

[D]ecorations, then, make statements about social values. The two central values are clan solidarity and prestige, and individual wealth and well-being. This suggests why it is so appropriate that Hageners decorate *themselves*, for it is men and women as persons who remain the points of reference of these values. This not to deny that the value of group solidarity could be expressed in many other ways, for example by cult buildings or statues. But decorations and dancing provide an excellent mechanism for demonstrating both of the two values together.

Performance Theory in Folklore

Theoretical developments pertaining to the definition of folklore and the classification of folklore genres are also relevant to the concept of style developed here. Definitions of folklore have typically considered it as a body of knowledge, a mode of thought, or a kind of art. In order to distinguish it from other knowledge, thought, or art, folklore is usually given the additional characteristics of being orally transmitted and contingent upon specific social and cultural contexts (cf. Dundes 1965; Ben-Amos 1972:5). Legends and myths have often been considered by folklorists as broadly reflecting culture, similar to the way pottery styles have been used by archaeologists to define prehistoric cultures.

Like many archaeological definitions of style, the typical definitions of folklore treat it as a "thing" to be utilized or acted upon by cultural actors. Ben-Amos approaches the definitional problem from a different perspective, arguing that "in its cultural context, folklore is not an aggregation of things, but a process—a communicative process to be exact" (1972:9). Although this latter point resembles the information exchange theory of stylistic behavior (cf. Wobst 1977), the performance theorists in folklore emphasize the importance of specific situations and small-group interaction in the maintenance of folklore texts and styles. In a brief statement that has considerable relevance for the unification of apparently divergent archaeological theories of style, Bauman (1972:38) argues that:

[A] true understanding of the social base of folklore performance must be based upon investigations which focus upon those social identities which are relevant to the performance of folklore within the context of specific situations and events.

And Ben-Amos (1972:13) adds the *caveat* that the small group must not be lost in the cultural analysis: "it is necessary to remember . . . that even when a certain literary theme or musical style is known regionally, nationally, or internationally, its actual existence depends upon such small group situations."

Abrahams (1978) illustrates that in addition to being a possession of a group and indicative of group culture and social cohesion, folklore and patterned speech may function to establish a sense of group solidarity in situations in which such has not previously existed. In an argument with important implications for the analysis of artifact styles, Abrahams (1978:165) considers the common employment of patterned speech, formulaic expressions, and jokes in situations when strangers are thrown together, such as on an airplane or standing in line: "the performing of items of lore in stress situations creates a sense of groupness in itself, especially when the lore addresses the common problems of the individuals in that situation."

In these theoretical developments and empirical studies, the emphasis is on expressive behavior as constrained by a complex intersection of tradition and context. As the Hageners demonstrate, the individual positioned in that intersection (as joke teller, potter, or clothes horse) must mediate cultural demands, immediate social situations, and personal motives and desires. That mediation is accomplished through the self.

EXPECTATIONS FOR STYLISTIC PATTERNING

The performance theorists in folklore have provided archaeologists with a very important lead, for they consider the many factors that relate the self with expressive behavior. Expressive behavior, including style, is the process by which individuals *re-create*. Re-creation implies both the reactive and the proactive dimensions of the self: interaction and presentation. As an act of re-creation, stylistic behavior is contingent on a number of factors, including general (sociocultural) and specific (interpersonal) reference relationships, the abstract values and ideals which guide behavior, the motivation for a specific act of expressive behavior, and individual competency. Although the intersection and interaction of these factors in expressive behavior preclude simple predictions of attribute patterning, the concept of re-creation can serve as a critical link for synthesizing theories of style.

The Behavioral Meaning of Attributes

In an earlier attempt to link style with the self, Voss (1982) argued that it may be impossible to develop a priori expectations about what specific formal types of design attributes should reflect different components of the self. He suggested, however, that it might be reasonable to assume that common, highly visible design elements are usually part of a culturally recognized design structure and reflect the information exchange component of style. In contrast, attributes having continuous variability, such as decorative zone dimensions and design element repetitions, which are "nuances" of style, tend to reflect social interaction (cf. Friedrich 1970; Graves 1981:315–316; Voss 1982:46). Plog (1983:130) questions the uniform application of these expectations, as does Carr (1985:17; Chapter 7), who notes that "continuous traits may exhibit vivid modalities and function like discrete attributes." Ethnoarchaeological studies of stylistic variability also emphasize this contextual specificity in attribute meaning (cf. Hodder 1982a, 1982b; Wiessner 1983; Binford 1986).

Although the relationship between attributes and behavioral meanings is clearly more complicated than previously thought, relationships do exist and can be explicated in light of the concept of re-creation. In these terms, it is instructive to compare the three major theories that have explicitly employed the concepts of self or personal identity in explanations of style (Voss 1980, 1982; Wiessner 1983, 1984; Carr 1985, Chapter 7). Carr (1985, Chapter 7) states that four steps are necessary to apply his synthetic theory to any artifact class: (1) establishing design alternatives for each step of the manufacturing process; (2) establishing the hierarchical relationship among design attributes; (3) assigning potential behavioral meaning (individual idiosyncrasies, interaction among individuals, cultural standards, etc.) to the levels of design variability established through the two preceding steps,

as specified by the theory; and (4) refining and restricting the probable behavioral meanings of attributes at each level. This last step is to be accomplished “in part by examining the geographic ranges of the states of each attribute in the archaeological record and comparing each distribution to trait distributions in ethnographically known circumstances of similar demography and environment,” and in part by “examining the contexts of use of artifacts having varying attribute states” (Carr 1985:22–23).

Similarly, Wiessner says that “in principle, assertive style should be distinguishable in the archaeological record from emblematic style, which has a discrete distribution, while the distribution of assertive style ranges from random to clinal” (1983:259). Moreover, both Wiessner’s and Carr’s statements mirror Voss’s test implications for ceramic design distributions:

[A]ny specific design element might exhibit either a homogeneous or a gradient distribution within a region, depending upon its recognition as part of a design structure. A design element recognized as part of the formal design structure would be expected to exhibit a relatively homogeneous distribution within a region whereas elements not recognized by potters as part of the formal design structure would tend to have a gradient distribution [1982:74].

However, gradient or clinal distributions are not expected within a site, village, or region unless *regular* interaction linked the participants in the social group concerned (Voss 1982:74).

These several congruent conclusions are consistent with the general model of the self and with the results of the sociological and folklore studies previously discussed. The interaction of the person with different levels of social groups, from family to society and beyond, clearly implies spatial contexts of different levels. This point does not diminish the significance of other constraints on design variability, such as technology, but it does imply that one principle focus for evaluating the behavioral meaning of design attributes must be their spatial distributions—that is, the degree of design variability with spatial contexts. This examination of distribution does not reveal the prehistoric self to the archaeologist but, rather, the contexts within which the self operated.

In addition to distribution, another relevant attribute characteristic is visibility. To the extent that an individual employs expressive behavior as a part of a motivated strategy of interpersonal interaction, that behavior must be observable, as emphasized by both Braun (1985) and Carr (1985, Chapter 7). Behavior that is not readily observable may very well be related to self-image, but will be ineffective in projecting impressions to others (cf. Wobst 1977). Although Voss’s consideration of the “nuances” of style (1982) was an attempt to capture this aspect of style, Carr (1985, Chapter 7) and Braun (1985) have translated the poorly defined concept of style “nuance” into attribute visibility. In particular, Carr (1985:16) defines a series of specific variables that are useful in defining attribute visibility. The variables pertaining to the physical visibility of an attribute include attribute size, attribute number, the degree of contrast between alternative attribute states, and comprehensibility. Variables pertaining to potential visibility within a group include the geographic density of the artifact, the social context of artifact use, and the artifact use-life.

The Interaction of Distribution and Visibility

These two attribute characteristics, distribution and visibility, relate directly to the two major aspects of the self: the individual as part of the social group, implying spatial context; and the individual as an actor, implying motivated attempts at interaction management. These spatial and visual dimensions of stylistic variation can be intersected, as implied by Carr and Rosenthal (1986: Table 1) and Carr (Chapter 6: Table 6-2), to produce certain patterns that can be assigned behavioral meaning in light of the understanding of the self in society. Obviously, each data set will have unique properties that must be considered when evaluating attribute distribution and visibility. For the purpose of this discussion, it will be assumed that the spatial distribution of design attributes can be discrete, clinal, or random; and that attributes have either high visibility or low visibility. Intersecting

these distribution and visibility characteristics produces six patterns. The following interpretations focus on regional, multicomunity patterning rather than intracomunity patterning, unless otherwise noted.

High-Visibility Attributes with a Discrete Distribution. This pattern reflects the relationship of the individual with what Hsu (1985:30) calls operational society and culture (1985:30). Although it is true that widely shared design features are maintained by small-group interaction (cf. Ben-Amos 1972:13) and that the process of re-creating the self always involves a negotiation between the personal and social selves, it is the spatial extent of the society and culture which is reflected by this distribution.

Because the attributes are highly visible and can reflect either active or passive social constraints (Carr and Rosenthal 1986:3; Carr, Chapter 7), a more specific interpretation of this pattern is not possible. The attributes may very well be part of emblematic style (Wiessner 1983) and function in information exchange (Wobst 1977) between the individual and some larger group. Such attributes are likely to be invested with shared symbolic meanings. On the other hand, these attributes may also reflect the passive enculturation of craft traditions—*isochrestic* variation (Sackett 1982, 1985, 1986). Either way, the pattern encompasses the involvement of the self with general reference relationships and with abstract values.

High-Visibility Attributes with a Clinal Distribution. This pattern is superficially contradictory. Most ethnographic and archaeological studies suggest that highly visible attributes should be part of culturally recognized styles: they are easily comprehended, readily copied, and somehow reflective of cultural sharing. On the other hand, clinal distributions are usually interpreted as indicating individual interaction within intimate society and culture rather than negotiation with the broader operational society and culture. One reasonable interpretation of this pattern is that it indicates the presence of a social boundary of some significance (cf. Wobst 1977) and the lack of sharing of specific stylistic attributes and meanings between groups. To the extent that the latter is true, the attributes will have little value in the management of intergroup relations. Consequently, they will tend to reflect interaction intensity between groups, very much like the low-visibility attributes which reflect specific interaction patterns within a group. This interpretation is consistent with the argument that highly visible attributes may reflect socially passive as well as socially active processes (Carr and Rosenthal 1986; Carr, Chapter 7; see Voss, 1982:76–77, for an example of this pattern).

High-Visibility Attributes with a Random Distribution. The common view that visible attributes are easily comprehended and therefore indicate cultural sharing appears to be contradictory with the random nature of this distribution. However, several interpretations are plausible: Consistent with the model of the self, the pattern may indicate individual creativity in the development of styles. The role of artistic license in style diversity and style change is discussed and illustrated by Rosenthal (Chapter 10) and Roe (Chapter 2).

Another interpretation of this pattern is that the archaeologist has erroneously assessed the visibility of the attribute relative to the context of object use. For example, an attribute that is highly visible and shared within a domestic unit need not be similarly visible and shared within the larger regional society. In this case, the visibility of the attribute from a regional perspective would actually be low rather than high, and would be in line with the random nature of its regional distribution. Hodder's discussion of stylistic behavior within domestic contexts (1982a, 1982b) is appropriate in this interpretation as is Carr and Rosenthal's (1986:5) more general discussion of the social-contextual specific nature of "visible" and "obscure" attribute traits.

Low-Visibility Attributes with a Discrete Distribution. This pattern can be interpreted in at least three ways. The first involves proactive within-group processes. As Carr and Rosenthal (1986:5) note:

[R]ather than communicating social identity and boundaries to outsiders, the attribute expresses within-group cooperation, interaction, and solidarity. Examples would be design attributes that symbolize the group within which subsistence risk is pooled among foraging hunter-gatherers (Wiessner 1983:272), or other horizontal networks, such as sodalities. Because such symbols become useful in close, person-to-person contexts, they need not be visible from a great distance. They can range from obscure to obvious.

A second interpretation is that the attributes reflect socially passive and isochrestic processes—Sackett's "iconography of the commonplace," stylistic behavior which "is acquired for the most part unconsciously, . . . is taught for the most part by insinuation, . . . [and] is employed for the most part automatically" (1985:158). In other words, the level of attribute visibility in this case may be accounted for by small-scale individual-group interaction and/or by the less conscious use of style. A final interpretation is that the pattern results from coding a clinally distributed attribute as a two-state variable (Carr 1985:21, Chapter 7).

Low-Visibility Attributes with a Clinal Distribution. This pattern almost certainly reflects the impact of specific reference relationships and the intimate society and culture (Hsu 1985:29–30) upon the individual. It indicates specific interaction patterns in small groups. This interpretation is supported by ethnographic studies (Friedrich 1970) and by archaeological analysis (Voss 1982).

Low-Visibility Attributes with a Random Distribution. This pattern, like a random distribution of high-visibility attributes, can indicate creativity and artistic license (Carr and Rosenthal 1986; Carr, Chapter 7: Table 7-2). Attributes with this pattern can also reflect individual competency in expressive behavior. One aspect of competency in artifact design involves motor skills (cf. Hill 1977). As Carr and Rosenthal (1986:11) point out, "motor habits can affect poorly visible attributes, but do not generally affect highly visible attributes that have great potential for being messages."

These interpretations are not new. The theories of stylistic behavior developed over the past thirty years have each been directed at one or more of these patterns and interpretations. Their coherence within the larger framework just presented is understandable in light of the implicit or explicit concern with the self. Paraphrasing Wallace's comment on the self in personality theory (1968:47), it appears that the history of the concept of the self in archaeological theories of style has, in a sense, been a history of the rediscovery of the obvious.

In order to use this interpretive framework with confidence, the archaeologist must assess sources of artifact and assemblage variability other than the stylistic. The abstraction of specifically stylistic attributes can be achieved only through a comprehensive analysis that includes all morphological and decorative variability. The casual application of the interpretations may easily lead to unwarranted conclusions. First, it is essential that raw material, technological, and functional constraints on design variability be evaluated, so that interpretations can focus on individual and social factors (Carr 1985, Chapter 7). In these terms, the distinction between artifact style and function (cf. Binford 1965:208) is blurry, not necessarily because style and function are the same thing, but because both have resulted from a unified process of manufacturing (Carr, Chapter 6; Sackett 1977, 1982, 1986). Second, the analyst must assess and control for various assemblage formation factors which can compound and make difficult the interpretation of style distributions: trade and exchange, variations in site function, variations in artifact function, discard patterns, and multiple occupations of a site (cf. Plog 1980, Wiessner 1983).

In addition, it is also critical to evaluate different methods of coding stylistic data because coding procedures can affect the apparent spatial distribution of an attribute (Carr 1985:21, Chapter 7). The archaeologist must be exhaustive in assessing the distributions of all relevant attributes, including both nominal and ratio-scale measures of the same attributes.

CONCLUSIONS

This paper must not be interpreted as advocating some sort of psychological archaeology in which an archaeological medium holds a sherd to his temple in a smoky room and mutters, "These incised designs reflect the deep inner feelings which the potter had about being both an individual and a Hopewellian." Rather, the arguments presented here underscore the significance of the concept of the self in archaeological style theory. The concept provides a focal point for understanding interaction, information exchange, symbolic uniqueness, and individuality in stylistic behavior as parts of the same process. In addition, this paper emphasizes the need for the appropriate application of the concepts of self and identity. If archaeologists continue to employ these concepts on some level in theories of style, it is essential that they be used explicitly and in a manner consistent with general social scientific usage and understanding.

As a process of the self, stylistic behavior involves re-creation. On the one hand, re-creation implies active participation rather than simple copying. In expressing oneself stylistically, the individual assesses the social context, evaluates personal abilities, behaves in accordance with motivations and desires, and may indeed employ idiosyncratic nuances. On the other hand, re-creation implies sociocultural constraint. The individual is doing again, perhaps in a modified form, something which has been done previously. The individual has learned from others the types of styles, the appropriate contexts for style use, the values and meanings attached to styles, and the significance of stylistic conformity. Therefore, stylistic behavior both expresses individuality and marks the social constraints upon the same.

These actions of the self occur in a wide variety of contexts, a point that reinforces the understanding that variations in style distributions and diversity exist on all levels of individual-group interaction (cf. Hodder 1982a, 1982b; Carr 1985, Chapter 7). Although style emerges from the intersection of the individual and the group, and therefore is spatially and temporally constrained, this does not mean that all aspects of style are diagnostic in the common archaeological sense of using spatial and temporal boundedness to define cultures or societies (cf. Sackett 1982, 1986; Binford 1986).

The concept of re-creation fosters the integration of the major archaeological approaches to style, each of which has emphasized at least one aspect of the self. The social interaction approach captures the reactive dimension by concentrating on the fact that stylistic behavior is learned from others in social groups and may reflect abstract cultural ideals. The information exchange theory stresses the proactive display of the self, particularly with respect to the integration of the individual within the larger society. The structural approach places the self within specific contexts, recognizing that meanings, motivations, and competencies are not uniformly distributed within or between groups.

To the extent that the various synthetic approaches have combined previous theoretical ideas about stylistic behavior, they have typically included both the reactive and proactive dimensions of the self. The holistic incorporation of the various theories of style under the concept of re-creation reinforces Wiessner's (1984) point that style contains information on social groups and boundaries, interaction rates, the nature of social relationships, and the expression of personal and social identity through time; the first three are wrapped up in the last. This conclusion provides archaeologists with the opportunity to link within a single framework a great deal of very important work conducted during the past thirty years.

Further, archaeological investigations of stylistic variation can have relevance beyond the discipline. We have drawn upon sociological, ethnological, and folklore studies not only to illustrate the relevance of the self to stylistic behavior, but also to document shared concerns across disciplines. Continued holistically oriented explorations of style should enable archaeologists to contribute to the broader social scientific dialogue about expressive behavior.

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Chapter 4

Style, Perception, and Geometry

DOROTHY K. WASHBURN

No style of painting could ever be analyzed fully by an exposition of its geometrical structure, but such an exposition is critical to understanding the basic principles upon which a more extensive elaboration of the many issues of style can rest.

HAGEN 1986:178

It has generally been the practice of analysts to use object-specific features (e.g., Hodder 1982) or holistic, Gestalt configurations (e.g., Willey 1962) to define styles. In this paper I will focus on an alternative approach which emphasizes the more basic properties of form, such as line, color, texture, symmetry, and orientation. I will argue that such basic properties of form lie at the heart of the concept of style. Specifically, I will discuss how study of the different states that can be taken by the basic property of symmetry can enhance our understanding of consistencies in decorative pattern in cultural contexts.

This approach is grounded methodologically in mathematical principles which were developed by Euclid and others for finite patterns in the plane and, much later, at the turn of the twentieth century, by the Russian crystallographers (Federov 1891a,b) for infinite patterns in the plane. It is also based on knowledge about the process of form recognition from experimental psychology.

The approach offers two advantages: (1) A rigorous mathematical analysis of design, based on measurement of basic universal properties, can provide a common framework within which styles can be compared and contrasted. (2) Study of the role of basic properties of form in the perceptual process can lead to new insights about the interface between the way individuals selectively perceive things and events and the way in which this information is used in specific cultural settings.

This chapter begins with a discussion of how the representation of reality is a process of selection of certain structural relations among formal entities. I then review how basic properties of perceived form can be described geometrically for representational and nonrepresentational art, with emphasis on symmetry transformations. Some recent advances in symmetry classifications are introduced.

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Finally, I summarize a variety of anthropological cases in which geometric descriptions of an art form further understanding of its style from a perception/communication standpoint.

PERCEPTION AND GEOMETRY

Human perceptual systems from different cultures are, of course, physiologically identical. What varies is the differential selection and processing of features in each context. In an identical scene, individuals from different cultures, and even from different life poses within the same culture, will “see” and respond to different features depending on their specific needs.

This selection process proceeds in a situation of continual visual overload. That is, every scene presents more features than the visual system can or needs to process. To handle this overload, individuals automatically filter and select only that information which is necessary for coping and responding appropriately (Dember and Warm 1979).

Indeed, experts in artificial intelligence who seek to devise models of the way we see and think find that mental visual images are structural descriptions rather than iconic pictures. That is, rather than being a detailed image of a scene or object, our mental images are structural models of the important features and how they are related. This structuring of key features has been discovered even in children’s drawings. Far from being naive representations, these schematics are actually more accurate renditions of the critical features of an object and the relationships among objects than are the more iconic, “correct” images that adults attempt to produce after being schooled in the principles of perspective drawing (Minsky and Papert 1974).

For example, a 5-year-old child might draw a cube as in Figure 4-1a, whereas an adult might represent it isometrically, as in Figure 4-1b. The properties of a three-dimensional cube include such aspects as: (1) each face is a square; (2) each face meets four others; (3) all plane angles are right angles; (4) each vertex meets three faces; (5) opposite edges on faces are parallel, and so on. The child’s drawing in Figure 4-1a accurately reflects this descriptive list. However, the adult, in an attempt to represent the cube as a three-dimensional object on a two-dimensional surface, transforms these properties so that they appear very different from those of a “real” cube. In the adult’s isometric drawing: (1) only one face is square; (2) each face meets only two others; (3) most angles are not right angles, etc. Thus, the actual geometric properties of a cube are more accurately depicted in the child’s drawing than in the adult’s. Both viewers, however, are attempting to render on paper a mental model of the essential properties and features of a cube and the structural relationships of these properties and features.

Other examples, such as a child’s drawing of people standing around a pond holding hands (Figure 4-2), use a “bird’s eye view” rather than a more “realistic” side perspective. The aerial view preserves the “real life” perpendicular relation of the people to the ground and ensures that the viewer sees all of the people in the scene. Children draw trees on a mountain (Figure 4-3) perpendicular to

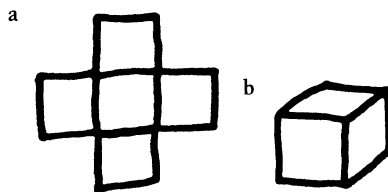


Figure 4-1. (a) Drawing of cube by 5-year-old boy (After No. 2, Minsky and Papert, 1974). (b) Drawing of cube by adult (After No. 3, Minsky and Papert, 1974).

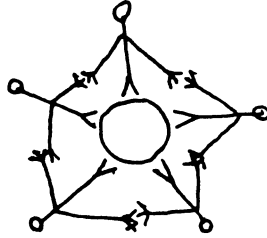


Figure 4-2. Child's drawing of children holding hands around a pond (After No. 4, Minsky and Papert, 1974).

the side of the mountain in an effort to present accurately the fact that trees grow straight out of the ground, not at the angle used in perspective drawings. Such depictions are not realistic representations but, rather, attempts to set down graphically the important critical relations which structure features (e.g., faces, angles, vertices) into an object (e.g., a cube).

These critical relations can be described by basic properties of form. Thus, an understanding of these properties should precede studies of how this perceived information is used in context. The perceptual psychologist, Margaret Hagen, in her excellent book *Varieties of Realism* (1986), calls these the "persistent properties" of the human environment. They include the size, shape, distance, color and composition of objects (Hagen 1986:7).

Each of these properties constitutes a potential variable that can be used to analyze the style of material culture. One of the most frequently studied is the arrangement of forms in planar space, often called layout or composition. Composition can be studied using a number of different mathematical properties and transformations. This chapter focuses primarily on Euclidean symmetry transformations which are used in composing infinitely extended decorative patterns in planar space.

The kinds of designs and media that can be studied for their Euclidean symmetry are extensive. Symmetric designs can be found on textiles, tiling, basketry, pottery, wood carving, incised bones, and other flat media or media surfaces like pottery or basketry which can be conceptually flattened for analysis. Such compositions include decoration purely for art's sake as well as designs that may symbolically express cultural values or information about social position or ethnic identity. The property of symmetry can generate both geometric, *nonrepresentational* patterns as well as *representational* art (i.e., figurative scenes of people, things, animals, etc.).

The term "symmetry" is commonly used to mean balance. For Westerners, the most salient kind of balance is bilateral reflection (see below). However, crystallographers and geometers are able to describe the different kinds of balance more precisely for objects in n -dimensions. One can study a finite shape like an n -dimensional polygon, focusing on either the symmetry of only one of its faces as

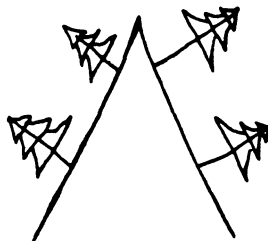


Figure 4-3. Child's drawing of trees on a mountain (After No. 5, Minsky and Papert, 1974).

it lies flat in a plane, or its symmetries as an n -dimensional object in multidimensional space. Alternatively, one can study the symmetries of a pattern in which the elements are repeated, theoretically infinitely, in one parallel or several nonparallel directions. These symmetries can be studied as they exist in either a flat plane or multidimensional space. Thus, it is useful to ground descriptions of form in the systematic language of mathematical properties and transformations.

Overview of Geometric Transformations

Geometric transformations are defined as changes in the geometric relationship of objects in a plane. Hagen (1986:28ff) has shown for representational art styles that there are four basic kinds of transformations that structure style. These are the transformations of *metric*, *similarity*, *affine*, and *projective* geometries. Although Hagen describes these in relation to representational art styles, they are also applicable to nonrepresentational designs. The objects that are changed can be whole objects or small motifs. I shall refer to these parts of a composition as *features*.

Transformations have a number of different aspects that can be studied. I will focus on how the different number and kinds of transformations affect the information that is projected. In general, the greater the number of transformations, the fewer the invariant compositional properties that remain.

Metric transformations preserve all properties of composition except the position and orientation of features (Figure 4-4). Changes in position and orientation of these features are achieved by using different symmetry motions to repeat the features along and/or about the axes of the plane. Metric transformations will be considered in greater detail, below.

Other kinds of geometric transformations of features affect additional properties. Increasing in complexity and in the number of invariant properties that they change are similarity, affinity, and projective transformations. Similarity transformations preserve the shape of a motif, but change its size. A typical example is a circular area of tiling where the centermost elements are much smaller

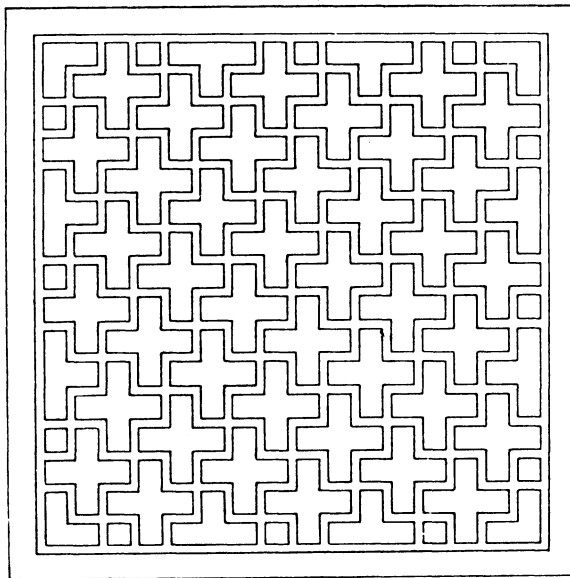


Figure 4-4. Metric transformation. Chinese lattice from residence, Chengtu, Szechwan, A.D. 1900 (After Dye, 1974 [1937], R2a).

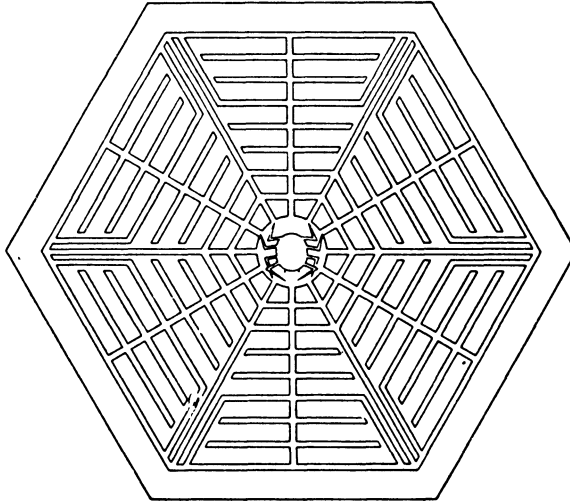


Figure 4-5. Similarity transformation. Chinese lattice from East Gate, Chengtu, Szechwan, A.D. 1800 (After Dye, 1974 [1937], 7a 10a).

than those on the periphery (Figure 4-5). Affine transformations change the angles of the motif shapes in one direction such that the pattern often appears squashed or twisted (Figure 4-6). Projective transformations, such as the diminishing perspective in Western figurative pictures, change almost all of the properties except such “primitives” as straightness (cf. Hagen 1986:Table 5.3).

Makovicky (1986) has presented a useful discussion of a number of other potential transformational categories that can be used to describe shape. For example, catamorphic transformations are especially suitable for describing patterns on curved ceiling domes, or on rounded and sloping walls of ceramic vessels or baskets. Color modulations, long-range color periodicities, and motif branching transformations have been described in preliminary ways but have yet to be systematically enumerated. All of the above transformations help the analyst describe how geometric properties underlie the viewer’s perspective in different representational art styles.

Metric Transformations

Metric transformations of non-representational planar patterns involve four symmetry motions: (1) *rotation*; (2) *translation*; (3) *mirror reflection*; and (4) *glide reflection* (Figure 4-7). These are called the isometries (i.e., distance preserving motions) or symmetries of a pattern. Each preserves the size and shape of features and the distance between them, changing only their positions in different ways. For example, in a translation, features are simply “slid over”; their orientation is preserved but their position is changed. In a mirror or glide reflection, where features are reflected across a mirror plane, both their position and orientation is changed. Likewise, in a rotation, where features are moved about a point axis, both their position and orientation is changed.

The result of moving any figure in a plane by one or several of these symmetries is *congruence*. Congruence, in combination with the distance-preserving nature of the transformations, leads to patterns that are regular and even. A square checkerboard is a good example.

For designs on a planar surface there are three axial configurations around or along which features move by the four symmetry motions.

1. *Finite designs* have features that move around a single point or line axis (Figure 4-8a). Only the

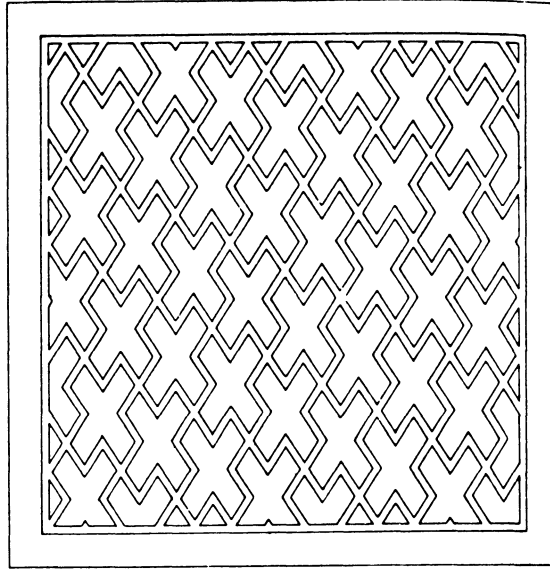


Figure 4-6. Affine transformation. Chinese lattice from Chao-chüeh monastery, Chengtu, Szechwan, A.D. 1662 (After Dye, 1974 [1937], R3a).

motions of rotation and mirror reflection are present and these can be repeated theoretically an infinite number of times around or through the central point axis. For example, a swastika has four projections that rotate around a point axis, whereas an isosceles triangle has a mirror reflection axis that bisects the triangle into two right triangles of equivalent size and shape.

2. *One-dimensional designs* have features that are translated parallel to a single line axis (Figure 4-8b). These are typically found as bordering bands of design. They are often called strips or friezes. There are four basic motions that generate these linear designs: translation, bifold rotation, mirror reflection, and glide reflection. Combinations of these motions yield seven motion classes, or ways to transform features.

3. *Two-dimensional patterns* have features that are translated in two or more nonparallel directions by translation, mirror reflection, glide reflection, and bifold (twofold), threefold, fourfold, and sixfold rotations (Figure 4-8c). Their combination yields 17 symmetry classes. These are also known as wallpaper groups (Buerger and Lukesh 1937) or periodic tilings of plane crystallographic groups. A detailed explication of each of these classes is beyond the scope of this article. A thorough, nontechnical presentation can be found in *Symmetries of Culture* (Washburn and Crowe 1988) and a more complete mathematical explanation can be found in *Tilings and Patterns* (Grünbaum and Shephard 1987).

All of the above pattern classes constitute the “states” that can be taken by the variable, symmetry, for patterns in a plane. These can be used to systematically study and compare the many manifestations of pattern styles throughout the world. The specific number of geometric motion classes should not be thought of as rigidly limiting the kinds of patterns that an artisan can produce. Rather, they comprise an analytic framework for studying how different peoples express a particular style. Hagen emphasizes (1986:133): “Artistic composition is directed, not dictated, by geometry.”

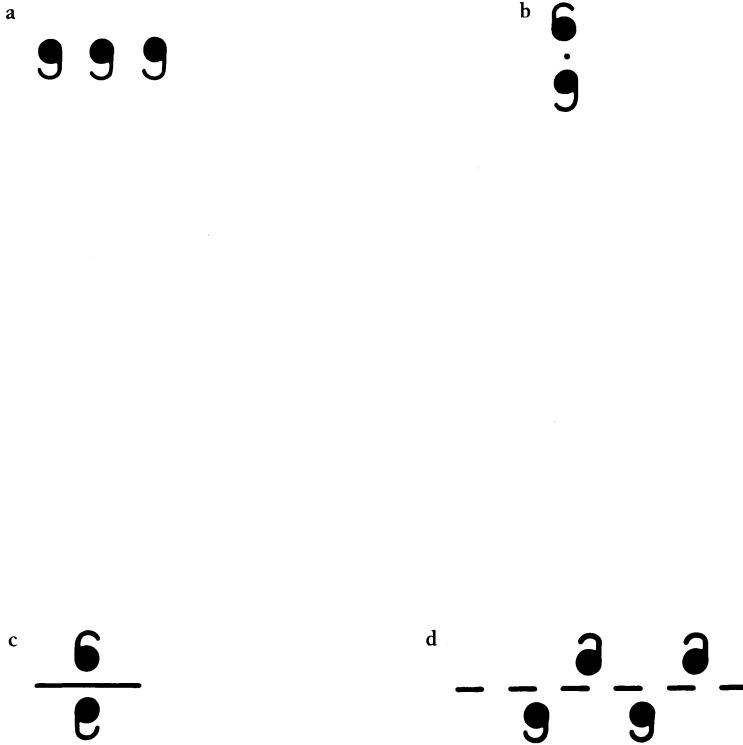


Figure 4-7. The four isometries of the plane. (a) translation; (b) rotation; (c) mirror reflection; (d) glide reflection.

Symmetry Nomenclature

For convenience, each symmetry class is designated by a nomenclature that specifies which motions are present.

The nomenclature for finite designs indicates whether the design has rotational and/or mirror reflection symmetry. Finite designs with only rotational symmetry are indicated by the cn symbol: c for “cyclic” and n for the number of rotations. Thus, a $c6$ design has sixfold rotation. Finite designs with both rotational and mirror reflection symmetries are indicated by the dn symbol: d for “dihedral” and n for the number of mirror axes. Thus, a $d6$ design has six lines of mirror reflection passing through the central point axis.

For one-dimensional designs, the most widely used nomenclature is a four-digit system. The first digit is the letter p , indicating that it is a pattern in the plane. The second, third, and fourth digits describe the presence or absence of vertical reflections, horizontal reflections or glide reflections, and bifold rotations respectively. The number 1 indicates translation, 2 indicates bifold rotation, m

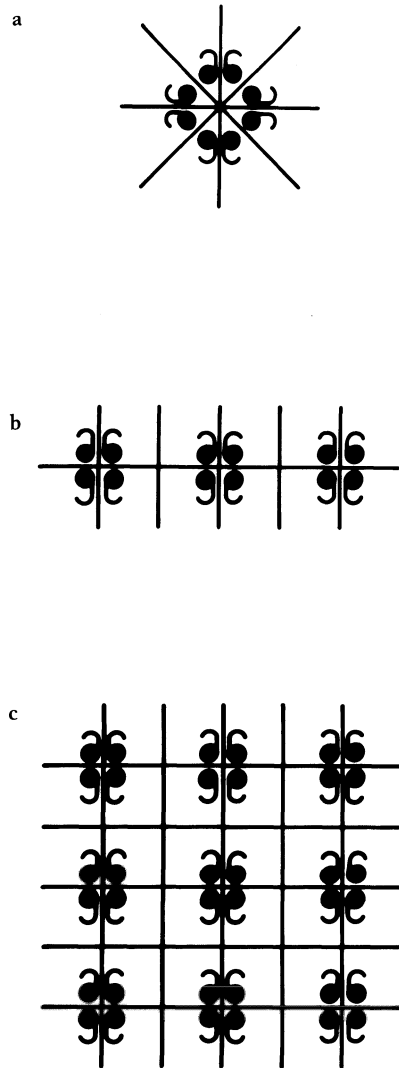


Figure 4-8. The three categories of the plane: (a) finite; (b) one-dimensional; (c) two-dimensional.

indicates mirror reflection, and *a* indicates glide reflection. Thus, *p111* designs have only translations; there are no mirror or glide reflections or bifold rotations. *P112* designs have bifold rotations but no mirror or glide reflections. *P1m1* designs have mirror reflections across horizontal axes, whereas *pm11* designs have mirror reflection across the vertical axis. *Pmm2* designs have bifold rotation and mirror reflection across both vertical and horizontal axes. *Pma2* designs have mirror reflections across the vertical axes, glide reflection, and bifold rotation. *Plal* designs have only glide reflections. It should be

noted that the motion of translation is not usually indicated in a design that has other symmetries in addition to translation. Translation is normally only mentioned when it is the only symmetry present.

The nomenclature for two-dimensional patterns is a shortened form adapted from the *International Tables for X-Ray Crystallography* (Henry and Lonsdale 1952). It indicates only those motions that are present and unique to a pattern and that are necessary for its identification. For example, $p1$ patterns have only the motion of translation; $p2$ patterns have the motion of bifold rotation; $p3$ patterns have threefold rotation; $p4$ patterns have fourfold rotation; and $p6$ patterns have sixfold rotation. These examples, incidentally, enumerate all the possible kinds of rotation in two-dimensional plane patterns. A single g , as in pg , indicates the presence of glide reflection only in one direction, whereas pgg patterns have glide axes in two directions. Likewise, the m in pm or pmm , for example, indicates the presence of mirror reflection axes. A single m indicates reflection lines in one direction only; two ms indicate mirror reflection lines in two nonparallel directions. Thus, for example, $p4$ patterns have fourfold rotation only, but $p4m$ patterns have mirror reflections as well as fourfold rotations, and $p4g$ patterns have glide reflection axes as well as fourfold rotations.

Different nomenclatures for both the one and two-dimensional pattern classes have been devised by Woods (1935a,b,c), Senechal (1975), Washburn (1977), Lockwood and Macmillan (1978), and Coxeter (1985a, 1985b). The nomenclatures described above are, at present, the most widely used. Schattschneider (1978) and Crowe and Washburn (1985) have convenient tables comparing several notations.

Recent Advances in the Study of Metric Transformations

The 7 symmetry classes of one-dimensional designs and the 17 classes of two-dimensional plane patterns have stood undisputed since the turn of the century. Description of patterns within this analytical framework has revealed many important differences in cultural practices that had remained undiscovered using other methods of analysis. For example, I have shown how different symmetry arrangements of identical motifs can be correlated with important temporal, spatial, and locational factors (Washburn 1983). In the case of the “flame” pattern of triangles on Greek Neolithic pottery, each of their different symmetry arrangements was found to occur in a separate geographic locale. Without this study of structural differences in the presentation of a motif, previous investigators had been able to observe only that “flame” patterns were present throughout the area.

In most cases, a cultural group uses only one or several of all the possible symmetrical arrangements of the features. This regularity can sometimes be used to define the geographic extent of cultural groups. For example, among the Anasazi of the American Southwest during Pueblo II–III times, the hooked motif was arranged most frequently in one-dimensional bifold rotational bands ($p112$). Figure 4-9 shows how this motif can be arranged alternatively for each of the seven one-dimensional symmetry classes. Occasional deviations from the $p112$ are found (Washburn 1977:Figure 71f) and can be used to identify trade items, migrations, and other outside influences.

However, there are patterns that cannot be described by the crystallographically based plane pattern symmetries. Patterns with a single deviation from one of the symmetry classes, which probably occur by artisan error, cannot be included in the above classification. For example, the single incorrect coloring of a floor tile in Figure 4-10 is undoubtedly such a mistake. There are other cases where the “mistakes” appear to have been purposely and consistently injected into the patterns. For example, the *Woto* pattern on the Bakuba raffia cloth in Figure 4-11 has a number of hooked motifs which are inconsistently shaped and arranged. This presence of many “mistakes” is characteristic of certain designs from the Bakuba.

The possible cultural underpinnings of these consistent deviations from the symmetry groups has yet to be studied systematically. However, several preliminary analyses have suggested possible interpretations. Brett-Smith (1984) has proposed that deviations from symmetry on cloth from central and southeastern Mali represent the desire to conceal certain knowledge from the uninitiated. Van

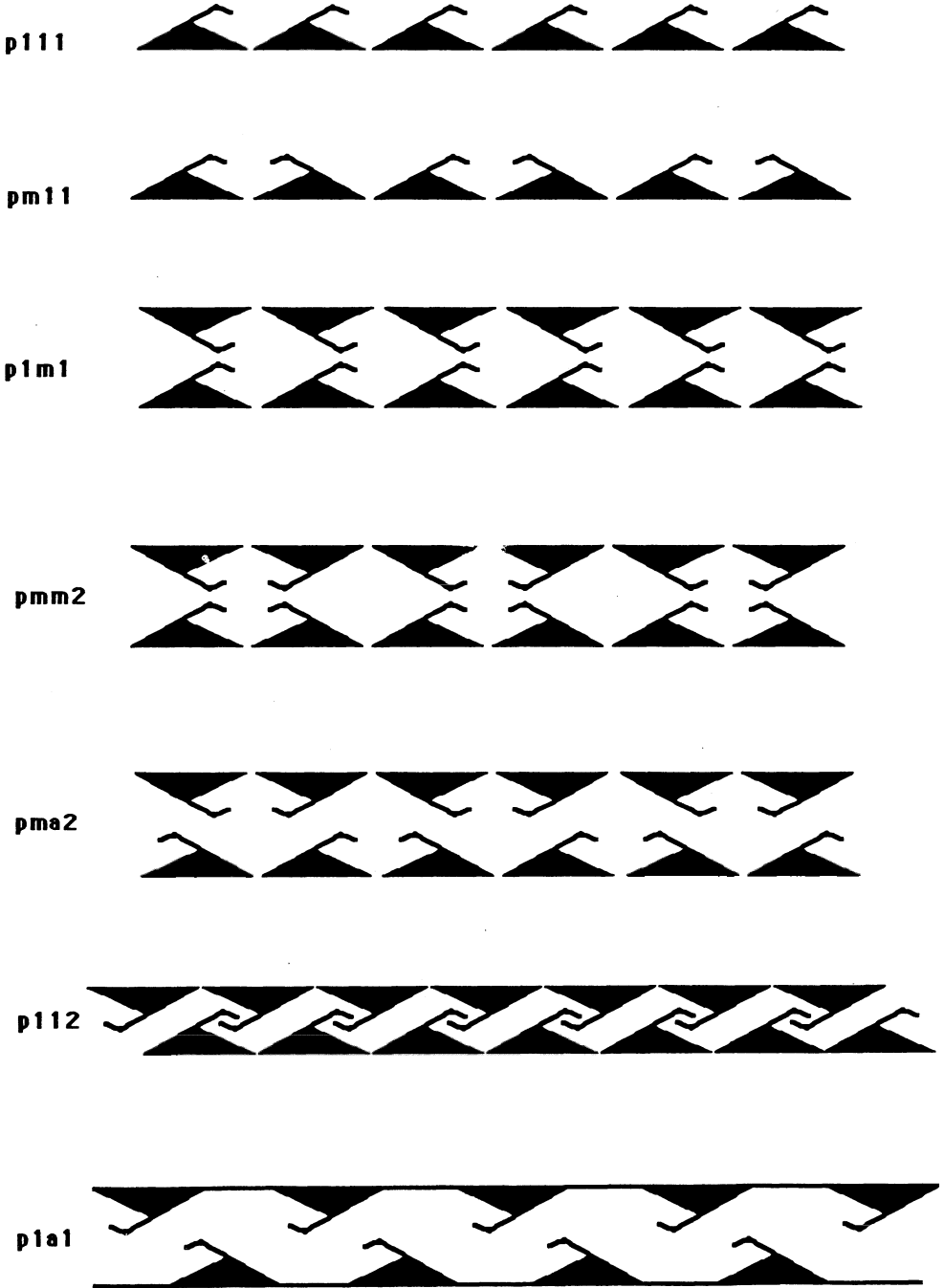


Figure 4-9. The seven classes of one-dimensional design based on a typical Anasazi motif. However, only *p112* is a typical Anasazi design symmetry.

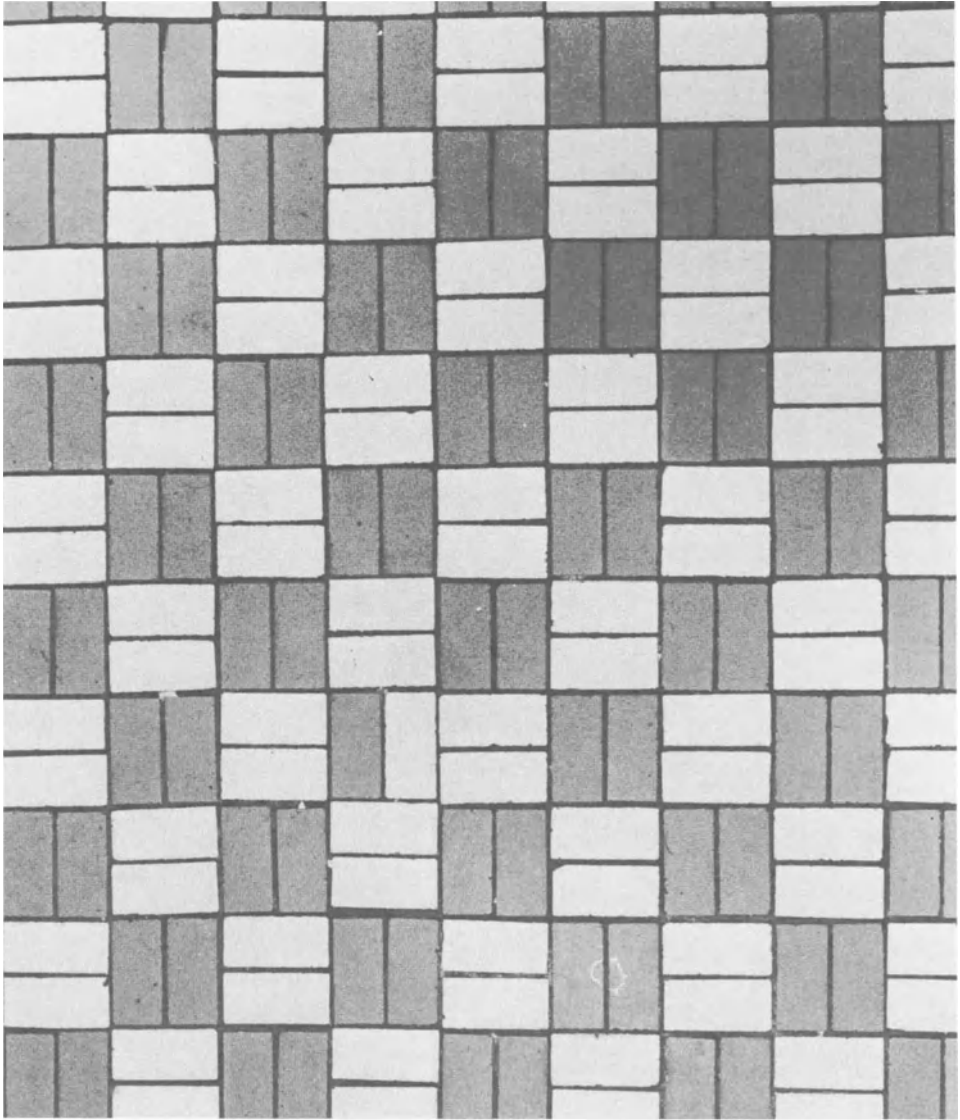


Figure 4-10. Floor tile with single coloring mistake.

Esterik (1979) has argued that design anomalies on Ban Chiang painted pottery reflect the desire to make the design more attractive because perfect symmetry is boring.

These and other nuances in symmetry patterns are becoming tractable as mathematicians have gained interest in the practical applications of crystallographic symmetries and have enumerated additional classes and subgroups of these classes. These classes are of considerable importance for they enable the student of style to describe patterns with even greater precision. Grunbaum and Shephard's



Figure 4-11. Embroidered border of Bakuba skirt, with numerous motif irregularities that cancel any consistent symmetry. Mushenge, Zaire (Courtesy J. Cornet).

(1987) compendium is an extraordinary example, advancing symmetry classification in a number of ways.

First, Grünbaum and Shephard have relaxed the criteria that were used to define the 17 classes of crystallographic groups in the plane so as to accommodate continuous motifs. They have proposed three additional classes. Class *slm* includes series of parallel lines that vary in thickness and that are not equidistant. Mirror reflections occur perpendicular rather than parallel to the lines. Class *smm* includes series of equidistant parallel lines of identical thickness where mirror reflections are both perpendicular and parallel to the line series. Class *s $\infty\infty$* includes solid patterns (Grünbaum and Shephard 1983 Figure 7).

Second, beyond this expanded classification by *symmetry groups*, Grünbaum and Shephard (1987) have introduced two other classifications for uncolored patterns. The first is classification by *pattern type* which subdivides the 7 symmetry groups for one-dimensional designs into 15 induced subgroups and subdivides the 17 symmetry groups for two-dimensional patterns into 49 induced subgroups. The 17 two-dimensional groups can also be subdivided into 51 motif-transitive subgroups. Patterns in the different types of each symmetry group “appear” to differ by the way in which the parts are separated or joined. For example, the two Chinese lattices in Figure 4-12 belong to two different types of the same symmetry class *p4*.

The second classification is by the *topological* transformations that operate on the motifs. These types are subdivided into those using circular disks, straight line segments, ellipses or filaments as the motifs. These additional refinements void some objections to the completeness of the geometric approach, such as Hodder’s (1986:39) concern that lines and circles cannot be accommodated within the standard 7 and 17 plane pattern classes. Circles are not patterns, but they do have symmetries.

A third way in which Grünbaum and Shephard have advanced symmetry classification is by

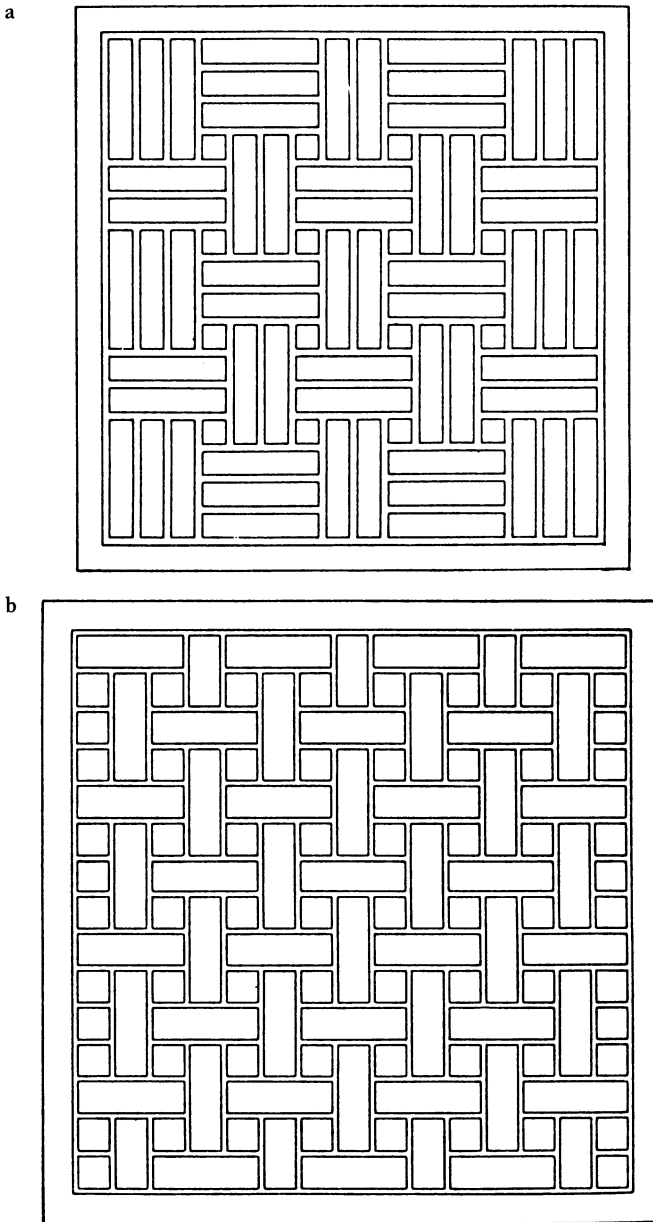


Figure 4-12. (a) Chinese lattice design on rice shop, Chengtu, Szechwan, A.D. 1850 (After Dye, 1974 [1937], K9a). (b) Chinese lattice design on residence, Chengtu, Szechwan, A.D. 1875 (After Dye, 1974 [1937], K9b).

subdividing *tilings*. Tilings are a special type of pattern composed of motifs that cover the plane without gaps or overlaps. Grünbaum and Shephard classify tilings as isohedral, isogonal, and isotoxal, according to how the whole tile, their vertices, or their edges, are respectively involved in the transformation.

The Use of Color Classes to Describe Other Pattern Features

Although many patterns may have parts colored by several colors, only those patterns where the colors change systematically on identically shaped elements have *colored symmetry*. Patterns where two colors alternate (e.g., black-white-black-white) are the most common. The 17 two-color classes of the 7 classes of one-dimensional design and the 46 two-color classes of the 17 classes of two-dimensional patterns have long been known (Woods 1936; notation in Belov 1964). However, the 23 classes of three-color patterns and the 96 classes of four-color patterns have only recently been described (Weiting 1982; Grünbaum and Shephard 1987).

The colored symmetry class of most colored patterns is simply a coloring of the class(es) of the basic pattern structure. For example, the two-color class $p'mm2$ is a coloring of the one-color class $pm2$. However, there is also a subset of symmetric patterns that has one symmetry when uncolored but a different symmetry when colored. Further, there is a subset of colored patterns that appear to be colored yet the colorings do not pertain to either the uncolored symmetry or any other symmetry. I described several examples in pre-Columbian Peruvian textiles (Washburn 1986a: Figures 9, 11, 14, 15). Grünbaum has noted similar problems in classifying the varying periodicities of color changes in Alhambra tilings (Grünbaum, Grünbaum, and Shephard 1986).

Makovicky (1986) has pointed out that the concept of color symmetry can also be used to describe patterns with different alternating figurative or nonfigurative motifs (e.g., triangles-squares-triangles-squares; birds-fish-birds-fish). Several such alternations may exist in a single pattern: changes in motifs, changes in colors, changes in orientation, and so forth. "Such a description is natural for the pattern because it encompasses both its highly symmetric and regular nature and the discrete nature of the 'complicating' elements" (Makovicky 1986:955).

Grünbaum and Shephard (1983) have used the colored symmetry classes to describe the ways in which motifs are overlapped or intertwined (A over B = white; B over A = black) in "layered" patterns, such as those found in Celtic or Islamic patterns. A subset of these are fabrics where the entire pattern is "held together" by the weaving of the component strands. Grünbaum and Shephard (1980) have described three subclasses of such fabrics using symmetry principles.

The standard crystallographic symmetry classes and the recently proposed extensions offer the analyst of cultural patterns ways to systematically study the formal property of pattern structure. Studies in some cultural contexts have been completed (see above). Other properties, such as color, have also been codified and explored extensively (Berlin and Kay 1969). Still others, such as orientation, have not yet received systematic study in cultural contexts. A more complete understanding of the components of style awaits the development of systematics for all formal properties.

GEOMETRY AND STYLISTIC INFORMATION

In previous sections, I have discussed the importance of the basic properties of form in the perceptual process and outlined an approach for systematically studying one of these basic properties, the symmetry of design composition. In the remainder of this paper I would like to demonstrate the relevance of both of these topics to the anthropological study of style. Specifically, I will show how the Euclidean symmetry of plane pattern layout in both representational and nonrepresentational art embodies stylistic information. I will also consider the correspondence between symmetry patterns and cultural groups.

Hagen (1986) has illustrated in a number of examples of representational art how each art style presents its subject matter consistently within one of the transformational geometries. A preference for one of the geometries occurs even though it is theoretically possible to present the same material in all of the geometric formats. This observation is extremely important for anthropologists because it shows that there is a geometric basis for the integrity and consistency in the style of any given cultural group.

In particular, since each of the transformations preserves and changes different properties of form, the presence of a homogeneous art style with a particular geometric perspective strongly implies that there has been selection of that perspective in order to emphasize specific properties. Moreover, it is through the highlighting of different properties that different kinds of information about the depicted subject are emphasized. Hagen (1986:201) has emphasized this point: "Every style captures different invariants. Each invariant of structure specifies something in the world, serves some communicative function within a representation."

Metric transformations introduce the least number of perturbations and thus preserve the most information about the objects in a composition. Each successive type of transformation introduces change in more invariant properties and, thus, change in the parts that are emphasized and in the information that is communicated.

I suggest that this process of information transfer occurs in both representational art, such as Hagen has studied, and in nonrepresentational design. To argue this point convincingly, let us first examine more closely the kinds of information that are projected and emphasized in representational art.

Representational Art

Describing differences among styles by their different geometries is simply a means for systematizing the way that artists pick and choose elements of the environment. Even in "naturalistic" depictions of an outdoor scene, the artist renders a selective interpretation, never an exact photographic image of it. Further, the artist can show the objects from a number of different vantage points and thus emphasize or deemphasize different aspects. Metric and affine transformations are two means for doing so.

Metric Transformations in Representational Art

When metric transformations are applied to representational art, the size, shape, distance, angle size, parallelism, perpendicularity, and relative length of each object is preserved. Each object is presented in a face-on perspective, as if the viewer were standing directly in front of it. Objects are not reduced in size anywhere in the picture plane. For example, in Egyptian tomb paintings there are frequent depictions of rows of objects, such as fish, animals, or grain sheaves, which presumably record harvest yields, gifts to the pharaohs, and so on. These objects are presented in frontal outline—a view that gives the viewer maximum information about the shape and thus the identity of the objects.

However, deviations from the normal metric transformations in Egyptian tomb paintings can also convey important information to the viewer. For example, rulers are generally rendered much larger than their servants. When objects that are normally the same size, such as people, are depicted in different sizes, this difference suggests a purposeful emphasis on certain cultural information. In this case, we have inferred that the information that is being communicated is the greater status and power of the ruler.

A second example of how Egyptians used deviations from the normal metric transformations to communicate information is in the depiction of many-layered objects such as the human body. Whereas the normal presentation of other objects was a frontal outline, for human bodies each important part was shown in the most informative position. Individuals were presented with a profile

view of the face, frontal view of the torso, and side view of the hips, legs, and feet. The different viewpoints each reflect an attempt to accurately render the shape of parts thought to carry important information.

For instance, heads—especially those of rulers and other important personages—were always portrayed in profile, perhaps to show distinctive facial profiles. This might have been done as a record and reminder of the purity of the ruling group or to emphasize particular physical differences from other surrounding, perhaps contesting ethnic groups. Could this same kind of message be the reason for the similar profile view that clearly depicts very distinctive facial features of Mayan rulers on their commemorative stelae?

Another excellent example of a non-Western representational system in a metric projection is the Walbiri sand story drawings. These depict objects and actions in schematic outline in bird's-eye view (Munn 1973). A small number of schematic forms are used. For example, a straight line may mean a spear, digging stick, human lying down, or animal stretched out. A curved line, when vertical, means a person lying (sleeping) on one side; when horizontal, it means a grove of trees. Thus, alone, each form may carry several meanings. However, when combined in different positions, the forms indicate a specific meaning. For example, in Figure 4-13, the vertical straight lines indicate persons sleeping in front of a bough shade, which is represented by a curved line. Each person has a fire, represented by a circle, beside his or her body.

Thus, differences in orientation, position, and type of line indicate specific information and meaning. The Walbiri have distilled objects to simple symbols and are able to tell many different complex stories by using different combinations among a small repertoire of these symbols. Such graphic systems, while appearing sketchy, can actually embody information as detailed as that presented in more “accurate” Western perspective representations.

Affine Transformations in Representational Art

Another type of transformation found in non-Western representational art is the affine transformation. This kind introduces major changes in shape through changes in angle and perpendicularity. One example is found in scenes on Japanese scrolls. In the interest of presenting the details of objects accurately, Japanese artists separate parts of objects from their proper contextual relationships. They are tipped, tilted, and stretched so that each may be clearly viewed. For example, household interiors are typically depicted “tilted up” so that the viewer can see the interior more clearly. However, size proportions remain invariant so that figures in the background are the same size as those in the foreground. Parallelism is also invariant. Thus, house walls or walkways maintain their parallel edges despite their position and tilt in the picture plane.

A more geometric, less realistic affine system is found in Northwest Coast Indian art. Here, although stylized, all body parts appear parallel to the picture plane; none are foreshortened.

In summary, these few examples and others discussed by Hagen (1986) show that different representational styles are based on different transformational geometries and that each style is largely based on one type of geometric transformation. Thus, one aspect of style results from the consistent portrayal of objects by using a specific way of geometrically transforming them. In fact, most non-



Figure 4-13. Walbiri sand painting (After Munn, 1973, Figure 2).

Western representational art is either metric or affine or some combination of these and other geometries (Hagen 1986:Table 9.1). It appears that non-Western peoples have found that these two geometries best preserve or alter in an informative way the very properties and their relationships that they consider important to portray.

Nonrepresentational Art

For most anthropologists, the concept of transformation finds its expression in the religious and mythical symbol system. There, objects or parts of objects are imbued with meanings not normally associated with them using, for example, metaphor, synecdoche, or metonymy (cf. examples in Hall 1977). Such transformations have frequently been defined by Lévi-Strauss and others. However, there have been few studies of transformations of nonrepresentational graphics.

An important exception is Hunt's (1977) analysis of hummingbird symbolism among the Zinacantecans where she shows how economically presented symbols can convey important information about basic concepts of world view. The Zinacantecans use geometric shapes—circles, eye shapes, undulant lines, squares—although stylized, to depict astronomical, calendric, and divine information. For example, the *olin* symbol, a cross-shaped motif, is used to represent aspects of the space-time continuum: cardinal directions, passage of the seasons, cyclical solar movements, and so on. The problem for the Zinacantecan artists was how to transform this multidimensional concept into a flat two-dimensional graphic symbol. Their solution was to show the dichotomous feature of time, as in day/night, dry season/rainy season, as a four-part motif with equal parts of two contrasting colors (finite colored symmetry class $d2'$) (Figure 4-14a). Likewise, the above earth/below earth spatial dichotomy is represented by a two-part two-color motif with bilateral or bifold symmetry (finite colored symmetry classes $d2'$ and $c2'$ respectively) (Figure 4-14b) (Hunt 1977:Figure 23, 181–182).

Since Hunt's analysis was done prior to Hagen's insightful decoding of the different transformational geometries, she bemoaned the fact that prehistoric peoples had difficulty presenting such multidimensional concepts in graphic form:

... [s]ince prehistoric peoples did not know the conventions of perspective invented in Europe during the Renaissance, their difficulties were compounded. . . . The solution chosen by prehistoric painters was to take only one aspect of a total concept at a time . . . to simplify [by selection] . . . producing a visual arrangement of the symbols of these simplified concepts. [Hunt 1977:181]

Without the perspective of how different geometries project different information, Hunt viewed these primitive artists as being severely limited by their inability to present three-dimensional material on a two-dimensional surface. According to her, these primitive artists could select only "bits and pieces that appear to have poetico-mythical value" (Hunt 1977:183). However, given Hagen's analysis, we can understand that these bits and pieces, presented in a metric transformational format, were apparently all that the artists felt was important and necessary for conveying information which was readily

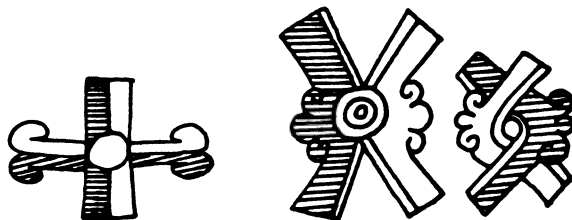


Figure 4-14. Zinacantecan *olin* symbols (After Hunt, 1977, Figure 23).

needed by group members. These depictions of parts in their appropriate, meaningful juxtapositions were sufficient, effective summaries of the critical core of concepts for the Zinacantecans.

Thus, geometric descriptions of symbols and their composition enable us to discover consistencies in the way in which information is represented in a symbol system. Hunt, herself, saw the system but she did not see that the system was based on consistent use of a particular kind of geometric transformation. What the Zinacantecan artists did was simply to present the essential basic elements of the time-space concept structurally, rather than with elaborate pictorial detail. That only structural relationships were sufficient is attested by the persistence and longevity of this cosmic system. Hunt shows that the basic framework (yearly agrarian, solar, and calendric cycle) has remained largely unchanged despite Western contact (1977:248ff).

Symmetry and the Styles of Cultural Groups

The Walbiri and Zinacantecan examples illustrate how metric graphics are used to tell specific myths and legends. We can also ask whether other kinds of cultural activities, such as group identity and structure, are embodied in the symmetrical juxtaposition of pattern parts. For archaeological data, this problem is not easily approached since we may be dealing with properties of parts whose symbolic meaning (i.e., group identity) is unknown. Nevertheless, there are both theoretical and empirical reasons for concluding that consistencies in symmetry patterns reflect cultural processes.

Theoretical Expectations

Based on the work of perceptual psychologists, I propose that if structural relationships among formal properties are critical for the basic perceptual processes of object recognition and classification, they must also be involved in basic cultural processes that use these recognition and classification processes. The recognition, development, and maintenance of group structure would be one example of such a basic cultural process. If we look at cultural identity in this way, we must then ask, what basic properties are related to the internal and external identity of a cultural group, to the ability to distinguish between one's ethnicity and that of others, and to the maintenance of group identity and structure? Two aspects of this identity problem need clarification.

First, structural analysis focuses on group/non-group features, not on self/nonself features. The features of an individual's style are not used in the same way as those of the style of a coherent cultural group. Group styles are produced consistently and persistently throughout a given temporal period and in a fairly circumscribed spatial area. In contrast, individual style is an elaboration within group style. In the framework of the geometric parameters discussed here, individuals work within the structural limits of the group and add their personally chosen embellishments. For example, different Bakuba weavers may produce different elaborations of a particular named raffia cloth pattern. However, certain constraints of structural organization, as well as constraints of their aesthetic principles of contrast in color, line, and texture, must be present in each example for the pattern to be recognized as Bakuba (Washburn 1990). In sum, I am positing structural primacy in group style and embellishment primacy in an individual's style.¹

Second, it is important to clarify that my use of the term "structure" applies to the way the geometric property of symmetry organizes features in a pattern so as to form consistencies that are recognized as "style." This differs from the more common use of structure in anthropological

¹EDITORS' NOTE: For a similar but more context-relative framework about formal stylistic hierarchies, see Carr, Chapter 7; Rosenthal, Chapter 10. For a differing view of the self and style, see Voss and Young, Chapter 3.

structuralism, as best exhibited in linguistic analyses and its extension to “design grammars.” It also differs from Hodder’s (1986:47ff) critique of such approaches as normative and antithetical to individual input.

Hodder (1986:48), for example, argues that style is more than “doggedly following the rules.” Recalling Boy George’s individualistic clothes, Hodder suggests that “no design grammar could ever have generated his selection of clothes, ornaments, and sexual innuendos.” This, however, is probably not true, since given enough temporal perspective, a Boy George grammar could undoubtedly be written. Humans do not act completely randomly² and Boy George, despite his aberrant appearance, may simply be the innovator of a new structural system. In fact, Hodder seems to reverse himself and recognize this when he says that Boy George “creates new style by transforming structural rules.” In the discussion that follows, it will become clear by example that symmetry patterns are not simply normative structures and that they can be used actively by a people to make a statement about themselves.

Empirical Studies

Studies of transformational geometries by Hagen (1986) for representational art, and by myself for nonrepresentational designs, have revealed correspondences between particular geometries and particular cultural groups. My own work with archaeological material has shown marked consistencies in the structural symmetries of Anasazi pottery (Washburn 1977; Washburn and Matson 1985), Greek Neolithic pottery (Washburn 1983), and Ica-Inca pottery (Washburn, 1984a).

I have also investigated databases that would allow me to study more directly the correlation of these preferences with specific cultural phenomena. The designs on northern California Indian baskets proved particularly illuminating since I could associate consistencies and changes in pattern structure with historical events and known tribal entities (Washburn 1986b), and more importantly, with the commentary of O’Neale’s informants (Washburn 1984b).

O’Neale (1932) recorded various weavers’ opinions on “good” and “bad” design structures. Hodder (1986) seems to suggest that these evaluations imply that the northern California basket weavers were tightly bound by a structural style which allowed neither individual innovation nor its active use for “creating new structure and new society.”

Let me examine this possibility further with data from nineteenth and twentieth century northern California basketry, especially that of the Yurok, Karok, and Hupa. Interestingly, these “tribes” spoke mutually exclusive languages, yet interacted and intermarried on such a frequent basis that their design system, and much of their other material culture, was virtually identical.³ Clearly language and the design system, in this instance, were not coterminous. What did correlate were the groups that interacted and the structure of their design systems. All Yurok, Hupa, and Karok patterns were structured by *p112* or *pma2* symmetries. It hardly seems coincidental that these are precisely the designs that O’Neale’s (1932) informants declared to be “good,” whereas those that were “bad” are designs based on the same elements but structured by other symmetries.

Further, those bowls and hats that had “bad” designs were those that were made specifically to sell to tourists, collectors, and anthropologists. O’Neale’s field notes are full of derogatory comments made by the basket weavers about the baskets that they made for sale to non-Indians. The weavers would never use the sale baskets themselves because, although they “appeared” technically correct and even had some of the same traditional motifs, they were “bad” in that the motif arrangement was neither *p112* or *pma2*. Also, additional elements and colors had been added which made the patterns

²EDITORS’ NOTE: see Braun, Chapter 5.

³EDITORS’ NOTE: see Pryor and Carr, Chapter 8.

too crowded for Indian taste, but which appealed to the prevailing Victorian sensibility for object complexity and juxtapositions of different colors and textures.

Thus, for the Hupa, Yurok, and Karok, “good” and “bad” designs and the different structures on which they were based do not delimit a structural style in a restrictive, dictatorial fashion. These peoples did not merely “doggedly follow the rules” of symmetry. Rather, they used these preferred ways of organizing design to assert and assiduously maintain their separate identity, even in the face of dramatic efforts at economic and political assimilation. In fact, although much of the culture of these California Indian groups was lost during the post 1850 contact period when many Indians were removed to reservations, the structure of their design system remained virtually intact. Thus, individuals do use structure to make statements about themselves.

In this case, designs with two different sets of structures were made, one for internal use and one for external extratribal consumption. From this example, it would seem more informative to take a closer look at specific properties of style, rather than making statements about the malleability of the general concept of style. Such studies which do this clearly indicate that some properties change under certain circumstances; others do not.⁴

SUMMARY

In this article I have suggested how basic properties of form are central to the concept of style. This is argued from perceptual data, which show the primacy of such properties in the recognition process, as well as from a mathematical perspective which reveals their consistent use in the structural formation of a given style. Analyses of the ways in which people conceptualize and draw objects indicate that they focus on key features and their relationships. From a geometric point of view, these features can be represented in four different ways, each of which emphasizes certain features and thus certain information about the object. Since major cultural styles can be characterized by these transformations, it appears that a study of the geometry of representation can be another accurate way to define the parameters of styles and to study their consistencies and changes through time and space.

I have focused here on the study of metric representational systems and have shown how they can be characterized by the different symmetries used to generate them. Studies of some ethnographically documented design systems reveal not only a high degree of consistency in the symmetry structure of patterns within cultures, but also that symmetry structure seems to correlate closely with group identity and interaction patterns. Future research may reveal that other behavior patterns are related to consistencies in symmetry.

A larger implication of this research is the belief that it is possible and illuminating to study some aspects of the cognitive phenomena of culture via mathematical properties and to understand their role in the perceptual process. I submit that in order to discover what objects and representations mean, it is essential to understand their structure and all aspects of the system in which they are embedded. Here I have emphasized the importance of understanding the geometric parameters of art and pattern. Systematically exploring the multifaceted nature of basic properties of form is a prerequisite to describing how they are uniquely manipulated into cultural styles and to recovering the messages that these styles convey.

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⁴EDITORS' NOTE: see also Carr, Chapter 7; Pryor and Carr, Chapter 8; Rosenthal, Chapter 10.

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Chapter 5

Style, Selection, and Historicity

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Archaeological studies of artifact “style” largely focus on two interrelated questions. First, what kinds of social communication take place through visual stylistic phenomena? Second, how do physical considerations affect these processes and the kinds of communication that take place? For many years, archaeologists have sought to answer these two questions by searching for cross-cultural regularities. Investigators assume that regularities do exist and that knowledge of them will result in more accurate interpretations of material records of past social conditions in any culture–historical setting. In my view, these assumptions rest on shaky ground, in particular on questionable concepts of causation.

This chapter presents a line of argument with four parts, all of which rest on a selectionist view of causation in cultural variation, continuity, and change. This view is a product of recent debates over the explanation of historical phenomena in general, in both the social and the biological sciences (e.g., Slobodkin 1973; Dunnell 1980, 1982, 1986; Allen 1982; Gould 1982, 1986; Rindos 1984, 1985, 1986a, 1986b; Gould and Lewontin 1984; Sober 1984; Boyd and Richerson 1985; Leonard and Jones 1987). The chapter expands on two recent papers examining explanatory concepts in social archaeology in general (Braun 1990, 1991a). It offers both a critique and an extension of arguments advanced by Dunnell (1978) and Hill (1985) for using evolutionary concepts in the study of stylistic phenomena.

The essay begins with an introduction to the controversy over theories of how social communication takes place through style, and then proceeds more or less sequentially through the four parts of my argument. These four parts are as follows:

1. The dominant theories of style and social communication focus on causal processes that are too short-term and too likely to be colored by culture-specific social practices either to explain longer-term (transgenerational) stylistic phenomena or to produce any cross-cultural regularities.
2. These context-specific processes, however, do strongly shape short-term (subgenerational) stylistic phenomena in any historical setting. As a result, archaeologists who are able to examine such short-term phenomena must try to take these processes into account in order to interpret the phenomena accurately in their historical settings.
3. Causal processes operating on larger scales of time and space—across many generations of interactions among people of diverse cultural practices—can produce cross-cultural regularities in the

relationship between stylistic and social practices. These broader processes may be termed cultural and natural selection.

4. The regularities resulting from cultural and natural selection exert little compelling force on the actions of individual artisans at any single slice of time. As a result, archaeological knowledge of these regularities cannot lead to more accurate interpretations of social conditions in any single historical setting.

INTRODUCTION TO THE CONTROVERSY

Archaeologists commonly apply the term “stylistic variation” to any variation in the appearances of artifacts that is not absolutely dictated by manufacturing and mechanical requirements (e.g., Sackett 1973, 1977, 1982, 1985; Wiessner 1983, 1984, 1985; cf. Dunnell 1978 for a different view). Researchers from the 1960s onward have posited that, under certain broad conditions, similarities and differences in artifact style reveal aspects of the social relationships among individuals, households, and larger groupings. These conditions supposedly hold in any settings where people directly can control the appearances of their immediate artificial environments by making their own equipment or trading only within their own communities for this equipment. Ethnological studies seem to show that artisans in such settings are more likely to shape and decorate their equipment in similar fashions, the more closely they share social identities (*sensu* Goodenough 1965).

Archaeologists who have studied analogous prehistoric settings have converted this ethnological understanding into an analytical assumption. This assumption specifies that the patterns of similarity in style among the artifacts of a community, and the patterns of spatial distribution of artifacts of similar style, can serve as indicators of the patterns of sharing of social identities that once existed there.

Both archaeologists and ethnologists have debated this analytical assumption ever since it was first proposed. If anything, the controversy has steadily deepened, despite several efforts at synthesis (e.g., Sackett 1977, 1982, 1985; Wobst 1977; Plog 1980, 1983; Graves 1981, 1985; Hodder 1982a, 1986; Wiessner 1984, 1985; Hill 1985; Conkey 1987).

The controversy persists for several reasons. Investigators often disagree over how to account for the physical processes by which archaeological deposits form (e.g., Stanislawski 1973; Schiffer 1987). Investigators also disagree over how to record and analyze suspected stylistic variation for different kinds of artifacts (e.g., Jernigan 1986; Plog 1980; Carr, Chapter 7; Pryor and Carr, Chapter 8; Plog, Chapter 11). Most crucially, investigators disagree over basic social scientific concepts, in three areas.

First, investigators differ widely in how they define the key concepts of “stylistic similarity” and “sharing of social identities.” A vast literature debates the question of what constitutes socially meaningful variation in artifact appearances, as reviewed by the several synthetic essays cited above. Should the analyst compare artifacts based on the specific techniques used to create their shape or decoration, the particular units of composition used to form the decoration, or the apparent rules followed to arrange the overall composition? A far more vast literature—indeed, much of social anthropology—debates the kinds of social identity relationships that can exist among people in different cultural settings and how these relationships find expression in peoples’ behavior toward each other. The terms on both sides of the analytical equation thus take on many different meanings.

Second, investigators disagree whether manufacturing and decorative practices play an active or a passive part in the ways by which people adjust their social relationships with each other (again, compare the several synthetic essays cited above). For example, do people manipulate the appearances of their artifacts to manipulate other peoples’ perceptions of their social identities? If so, then the appearances people maintain in their equipment and behavior may reveal more about how they want to be *perceived* by their neighbors than about actual social identities.

Third, cultural anthropology, including archaeology, has no single core concept of causation

about how particular events or conditions may be said to “cause” others to exist or come about. As a result, different theories of style and social communication often rest on different concepts of causation. These concepts almost always are highly implicit and are rarely challenged, yet such challenges are crucial to the search for explanation.

The debates in these three areas of controversy share an important feature: investigators almost always resort to ethnographic records to support or refute each other's positions. Unfortunately, ethnographic records do not and probably cannot provide the information demanded of them in these debates. Ethnographic studies rarely duplicate each other's methods and definitions, discouraging comparison. Further, archaeologists and ethnologists alike commonly try to interpret ethnographic data using theories framed in deterministic and mutually exclusive terms. As Hill (1985:374–382) has noted, such ways of framing research questions may themselves be invalid. Finally, few ethnographic records cover spans of time or space comparable to those that archaeologists routinely encounter (Wobst 1978). As a result, I would argue that archaeologists have saddled themselves with inappropriate concepts of causation in their debates over theories of style and social communication.

CAUSATION AND STYLISTIC VARIATION

The archaeological record lends itself to study on many scales of time, from individual moments to sequences of centuries and millennia. Long-term cultural phenomena, which concern continuity and change in cultural practices across many generations of interactions among people of diverse cultural heritages, I call *transgenerational* cultural phenomena. Their study has a central place in archaeology because they may produce the cross-cultural regularities that archaeologists seek to explain.

Different kinds of causal processes can and do operate at different temporal scales in the cultural realm, as they do in all other physical realms (Allen and Starr 1982; Salthe 1985). It is surprising, therefore, that archaeologists rarely distinguish among theories of causation according to the temporal scale(s) to which they apply. Specifically, archaeologists rarely consider whether transgenerational cultural phenomena are amenable to understanding in the same way as the shorter-term phenomena discernible to the ethnographer. This essay argues that the causes that shape cultural variation and change at the scale of day-to-day human interactions are different than the causes that shape transgenerational and especially cross-cultural phenomena. In order to discuss the implications of this difference, I first must identify the concepts of causation most commonly employed in the study of stylistic phenomena.

Social Practices, Continuity, and Change

My arguments about causation rest on definitions of three specific concepts: those of “cultural practices,” “social practices,” and “social continuity and change.” I define cultural practices as any aspects of human behavior and thought that are transmitted by cultural (as opposed to genetic) means from one individual and generation to the next. I then define social practices as any cultural practices that specifically affect the flow of information and materials among people, the extent of peoples' cooperation or competition, the ways in which decision making takes place within groups, or the persistence of groups themselves. Finally, I define social continuity and change as matters of continuity and change in the statistical popularity of different social practices over time in a given cultural setting.

Variation always exists in the statistical popularity of alternative social practices among interacting sets of people. These sets can be individuals, households, or any other repeated arrangements of people. Among these sets, different social practices can exhibit different histories of persistence over time. Some practices may persist for long times, over which their statistical popularities may or may not shift. People may also adopt new practices or abandon old ones. Thus, the kinds of social practices

in use, their absolute and relative frequencies of use, and their ranges of variation from one set of people to the next all can change or not change over time.

All communities and their cultural practices have histories. Consequently, researchers that seek to understand continuity and change in social practices in any given historical case must ask, how did the particular historical conditions of interest come to be? More precisely, how did the different, specific social practices of interest come to exist in this particular setting; and how did the different groups of people that interact in this setting come to differ (or not) in their adhering to these different, specific practices?

Style as Social Practice

Any stylistic practice can be a social practice, by the definition given above. As a result, researchers that seek to understand continuity and change in stylistic practices in any given historical case must ask the very questions just stated. This assertion runs contrary to at least some archaeological thought, however, and so requires some explanation.

Most archaeologists adhere to one of three broad schools of thought on the social interpretation of stylistic variation: (1) the *learning or interaction* approach (e.g., Deetz 1965; Whallon 1968; Hill 1970; Longacre 1970); (2) the *information exchange* approach (e.g., Wobst 1977; Conkey 1978; Plog 1980; Braun and Plog 1982; Voss 1982; Wiessner 1983, 1984); or (3) the family of so-called “post-processual” perspectives, which I collectively label the *social-dialectics* approach (e.g., Hodder 1982a, 1982b, 1986; Miller and Tilley, 1984; Spriggs 1984). Some writers also have advocated a unification of the first two, albeit in differing ways (e.g., Sackett 1982, 1985; Hill 1985; Voss and Young, Chapter 3; Carr, Chapter 7; Pryor and Carr, Chapter 8). I do not review these schools here, but look only at their concepts of causation.

Proponents of the learning/interaction school see the patterns of variation in stylistic practices among interacting people only as being shaped by social practices. The social practices of their interest are ones affecting the continuity of those social relationships through which people learn to make (or choose) their equipment, and through which they may or may not be exposed to alternative practices.

Critics of the learning/interaction school emphasize its failure to address the possible meanings or functions that an artifact’s appearance may hold, and the ways these may affect the adoption or perpetuation of alternative stylistic practices. The other two schools of stylistic interpretation focus precisely on these additional phenomena. These two schools identify the ways by which people shape their artifacts’ appearances as important parts of the ways by which they shape their interactions with each other.

People in every community interact not only as individuals, but as members of perceived social categories. The existence of these categories means that people at any given time stand either inside or outside of each other’s various circles of cooperation and sociability. Proponents of the information exchange and social dialectics schools assert that artifact appearances allow people to summarize for each other, “at a glance,” where they stand, or want to stand, or want others to think they stand, with respect to each others’ circles of sociability. Hereafter, these two schools diverge (see below).

The information exchange and social dialectics schools are thus both iconological (Sackett 1982, 1985) or what I call “activist” schools of thought. That is, they focus on aspects of artifact variation that Sackett (1982) has termed “iconographic” and Plog (Chapter 11) terms “symbolic.” These are aspects of artifact variation that are subjected to deliberate manipulation, that vary in obvious and readily categorized ways, and that may carry specific meanings for their likely audiences. Such aspects of artifact variation contrast with what Sackett has termed “isochrestic” features. These latter are aspects that are not subjected to deliberate manipulation, that entail subtleties and nuances of artifact execution, and that do not carry specific social meanings within the community.

The distinction between iconographic and isochrestic features unfortunately oversimplifies. So-called isochrestic aspects of style *can* have social effects. Among people familiar with each other’s

belongings and manufactured products, many can recognize each other's materials (e.g., Roe, Chapter 2; Pryor and Carr, Chapter 8). This recognition takes in each person's habitual, distinctive ways of doing things, not just their use of specific stylistic elements. This phenomenon parallels people's abilities to recognize each other by subtle details of their facial features, the sounds of their voices or footfall, and so forth. All of these phenomena can have the *effect* of reminding people of each other's presence (see also Sackett 1985).

I now return to the definition of "social practices" offered above. This definition focuses on the *effects* rather than the intent of peoples' actions. It follows from this definition, that both iconographic and isochrestic stylistic practices can constitute social practices. Yet the distinction remains useful. The two kinds of stylistic variation differ not in the oft-claimed presence versus absence of intentionality (e.g., Hill 1985; Sackett 1985; Wiessner 1985), but in *how* they come to have their social effects. Isochrestic effects pivot on the recognition of habitual ways and idiosyncrasies among personal acquaintances. Iconographic effects pivot on the recognition of cultural rules of visual expression and symbolism among people who interact not or not only as personal acquaintances, but as members of wider social circles. I return to this point later.

This distinction between the social effects of people's practices and their intent opens up a crucial conceptual door. It allows the researcher to handle isochrestic and iconographic variation within a single framework (see also Hill 1985; Voss and Young, Chapter 3; Carr, Chapter 6). Far more importantly, it helps expose a central flaw in the activist programs and in recent synthetic efforts. This flaw lies in their assumption that the causes that shape cultural variation and change at the scale of day-to-day human interactions are the *same* as those that shape transgenerational and especially cross-cultural phenomena.

Causation in Activist Interpretive Programs

The information exchange school explains people's visual signaling as parts of their efforts to minimize social uncertainty. People always must interact with others whom they may not know personally but whom they may encounter within some larger community. By signaling shared or complementary identities within groups and differences in identities between groups, people presumably use their appearances to help each other decide how to behave in each other's presence. This signaling presumably helps people realize their shared goals of minimizing social frictions and reinforcing social self-images.

The information exchange school thus offers an *adaptationist* program for explaining stylistic variation. That is, people's social practices are interpreted as adaptive strategies, which convey greater advantages relative to other potential social practices in a given setting. These inferred advantages usually entail (1) holding down the risks that people encounter in their efforts to obtain necessary resources of land, raw materials, and finished goods; (2) holding down uncertainty in their efforts to maintain access to each other's labor, knowledge, and skills; and (3) maintaining practices that ensure timely and effective decision making within their groups.

Cultural adaptationism attempts to unify cultural ecology and cultural evolutionary thought. It has a long history in archaeology, where ideas on how cultural adaptation happens have changed. In particular, the idea that adaptation takes place at the level of abstract systems and systemic laws (e.g., Flannery 1972) has eroded. "Cultural systems" simply are not real physical entities about which researchers can discuss any real physical events and causal forces. Instead, cultural adaptationist thinking has shifted to the idea that people's cultural practices, including social practices, are goal-directed and are arrived at through their rational and often collective efforts at adaptive problem solving (e.g., compare reviews by Kirch 1980; Braun 1990, 1991a; versus Braun and Plog 1982).

Thus, current cultural adaptationism holds that adaptation can occur in the practices of individual persons as well as in the practices of any people who regularly act together and respond collectively to changes in their shared circumstances. Adaptation presumably can occur not only in

material-, energy-, and labor-transforming and decision-making practices, but also in ritual practices and beliefs that help people perpetuate their other adaptive practices. In cultural adaptationist research, each group's adaptation at a given time is portrayed as the product of a cumulative history of what Sahlins (1976) has termed "practical reason." If often only implicitly, the information exchange program entails precisely such a view of how stylistic variation and change come about.

Proponents of social dialectical approaches, in contrast, do not see social practices as directed toward any collective adaptation. Rather, they see people everywhere set in a world of limited resources of land, raw materials, finished goods, and each other's labor, knowledge, and skills. The flows of these resources are organized in larger systems of production. Different individuals and groups exercise different degrees of control over these systems of production, through socially defined authority over the resources and activities involved.

It follows, in this view, that inequalities necessarily always exist in people's control over resources and systems of production, even within the smallest of communities. This defines a basic contradiction: people need each other as resources, but must struggle with each other for control. The particular inequalities present in any community at a given time define the lines of struggle in that setting. People can struggle over their physical access to resources, their rights of control over resources allowed by existing social conventions, or the ideologies through which they legitimize these conventions.

Thus, social-dialectical programs also treat human social practices as goal-directed, but with different goals. Further, this program emphasizes that the ways in which people formulate and pursue social goals are always highly bounded or structured by culturally specific patterns of thought and expression (e.g., Sahlins 1976; Bourdieu 1977; Giddens 1979; Hodder 1985, 1986).

Proponents of this view (e.g., in Hodder 1982b; Miller and Tilley 1984; Spriggs 1984) identify stylistic practices as parts of the ways by which people carry out their culturally bounded social struggles. The members of a community presumably manipulate appearances as parts of their efforts to "negotiate" their lines of cooperation, competition, and authority, and to legitimize their actions (Hodder 1985).

STYLISTIC VARIATION AND HUMAN AGENCY

The above review shows that, despite their differences, both of the information exchange and social-dialectical programs treat stylistic variation in all specific instances as the consequence of *intentional* social action. That is, they focus on causes that shape cultural variation and change at the scale of day-to-day human interactions. Most papers in this volume also share this perspective. I now turn to the argument that these kinds of processes differ from those that shape transgenerational and especially cross-cultural phenomena.

Decision Making and Timescale

Intentional actions pervade our daily experiences. Through personal experience, we see ourselves and everyone else as acting to shape our circumstances. This perception strongly shapes archaeological thinking. In particular, archaeologists commonly treat historical phenomena on the order of minutes, decades, and centuries as equivalent kinds of phenomena. Investigators therefore commonly treat the phenomena of cultural continuity and change as simply accumulations of the continuous, daily dynamics with which we are so familiar. These continuous accumulations of peoples' intentional actions and their consequences supposedly produce the kinds of coherent cultural phenomena we recognize for their transgenerational scope. Such broader scale phenomena include, for example, so-called cultural adaptive strategies, ideologies, ritual systems, and systems of social reproduction, as well as cross-cultural regularities among them.

Unfortunately, broader scale, longer-term cultural phenomena do not happen through any such simple accumulation of people's daily actions. Different causal processes operate at these two different scales of time and space. There are many reasons, as follows.

1. Humans directly experience only a succession of immediate moments, to which we react based on our knowledge and experience. However, our knowledge of present circumstances consists only of our perceptions of our own and others' *pasts*. We are neither omniscient nor prescient, and cannot predict the consequences—including the social effects—of our actions in any but the most immediate and simple of circumstances. And even then, we are often wrong.

2. Our perceptions of present and past circumstances, in turn, are always shaped by unique, culturally specific ways of signifying the world around us.

3. We are limited in the amount of information we can juggle at the same time, in trying to decide on our actions.

4. Our actions often have consequences that take years to manifest themselves. Also, our actions often impinge on circumstances that are so complex that no one can accurately predict the outcome of their actions or those of others. In particular, interactions among diverse individuals and groups can produce coherent phenomena on a scale impossible to predict from the intentions of the participants. Such larger scale consequences of individual and group action constitute an important part of the circumstances, however perceived, in which people act.

5. No two people in any community ever go about their daily lives or experience the same events in the same way, let alone share the same capabilities, expectations, and goals. Indeed, people's expectations and goals often conflict with each other.

6. Scholars emphasizing intentional action as the agency of cultural variation and change sometimes treat innovation as goal-directed as well. That is, people supposedly experiment with the ways they do things, to see if they can find "better" ways. However, people do not innovate only, necessarily, or even primarily to solve adaptive problems or to help them negotiate their social interactions. People can experiment for an infinite number of reasons, including simple curiosity. Anthropologists, of all people, should not assume otherwise and thereby ignore the richness of human capacities.

These six reasons help to remind us that the dynamics of individual and group intentional action and interaction comprise a fascinating realm of social phenomena. Clearly, explanations for events and conditions at any single time in a particular cultural setting must rest on accurate descriptions of these dynamics. However, we must still ask ourselves, how do the rich dynamics of decision making and interaction sort out to produce the slower-paced phenomena of cultural continuity and change?

The six reasons just presented lead us to recognize that, on the larger temporal stage, prior histories of chance events and their coincidences must always strongly frame the possibilities for continuity or change at any given time. In human affairs, such chance events and conditions can arise from many sources, including: (1) histories of geological and ecological phenomena, sometimes as consequences of human actions; (2) histories of actions on the part of other people and interactions among these; (3) histories of innovations in both cultural practices and beliefs; (4) histories of conflicts of interest among interacting individuals and groups; and (5) diverse coincidences among these. These phenomena lie far beyond the control of people's intentions.

Thus, on the larger temporal stage, the rich dynamics of decision making and interactions produce only a vast outpouring of individual and group trial and errors as people pursue their goals in the face of a world over which they have, at best, only extremely limited control. People's goal-directed actions create only a blind source of *possible* cultural practices and cultural variation.

Nothing about this outpouring of trial and errors dictates that it will produce stability or accumulate change in any one direction or another, over spans of time greater than the lives of the people involved (cf. Friedman and Rowlands 1978; Ellen 1982; Hill 1985). That is, nothing ensures that the effects people intend by their actions will be the effects that actually emerge on the larger

temporal stage. Further, nothing about this outpouring suggests a way that it might result in cross-cultural regularities; that is, in aspects of cultural practices that tend to persist or hold true across all culture–historical settings. Nevertheless, somehow this occurs.

Implications

Thus the question remains, how *do* the rich dynamics of decision making and interactions get sorted out on the larger temporal stage? If specific social practices arise and persist over timespans of many generations in some particular historic setting, how can this be explained? Further, if some aspects of social practices hold true across many historically independent cultural settings, how can this be explained? I argue that a researcher should approach such questions by asking what it was about the specific practices, *themselves*, that shaped their statistical popularities over time. Thus, a researcher must pose two specific questions: First, how did different, specific practices come to be present in the given historical setting? Second, over the timespans of generations, how did the different sets of people interacting in this setting come to differ or not in adhering to the different, alternative practices available to them?

Neither of these two questions requires rephrasing as a question of intentional action, of why people *decide(d)* to invent, adopt, perpetuate, emphasize, or abandon various cultural practices (e.g., Hill 1985; Hodder 1986; Washburn, Chapter 4; Pryor and Carr, Chapter 8; Rosenthal, Chapter 10). Researchers investigating transgenerational phenomena need only consider how specific practices affected the likelihood of their own perpetuation *relative to the alternative practices available* in a specific historical setting. But this rephrasing begs the final question: How can specific practices “affect the likelihood of their own perpetuation?”

SELECTIONISM

The concept of “selection” provides a framework for handling the problems posed above. That is, researchers can better understand transgenerational continuity and change in social practices, including stylistic practices, as matters of “descent with modification,” to use the classic Darwinian phrase (Dunnell 1980, 1982, 1986; Rindos 1984; Leonard and Jones 1987; Braun 1990, 1991a). Hill (1985) was the first to apply this concept to the study of stylistic phenomena, although he identified human decision making as the physical mechanism by which selection takes place regardless of temporal scale.

Cultural phenomena satisfy three necessary and sufficient conditions for selection to take place (Dunnell 1980): (1) There exists a continuous stream of novelty and variation in the characteristics of the entities present. (2) There exists a continuously operating mechanism by which these characteristics may be transmitted to other entities and thereby be perpetuated beyond the lifespans of individual entities. (3) At any given time, diverse circumstances can impinge on the transmission of different, *alternative* characteristics, and thereby inhibit the transmission of some characteristics relative to others. This portion of this chapter reviews each of these conditions, to argue for their relevance to the analysis of long-term continuity and change in people’s social practices.

Novelty and Variation

People have a vast capacity to differ in capabilities, creativity, curiosity, expectations, and goals even in the smallest of communities. To be sure, this capacity is canalized by existing conventions of belief and culture-specific ways of organizing perceptions and expectations in any given historical instance. Nevertheless, it constitutes a pervasive source of new, alternative possibilities for people’s

cultural practices in all cultural settings. Also, people can change their practices over the course of their lives by discarding old ones and learning new ones, churning the waters further.

People's intentional actions and interactions comprise their direct experiences with the making of history. Much goes on at this temporal scale, as discussed above. It is also precisely this temporal scale to which the information exchange and social dialectics approaches apply, for the interpretation of stylistic phenomena. However, as also discussed above, events at this temporal scale take place within a larger context, about which these approaches say very little. To paraphrase Hill (1985:379–385), these approaches are not wrong but only partly right.

In the selectionist conception, researchers interested in longer-term, transgenerational phenomena need not ponder the motivations that lead people in a given setting to vary in the actions they decide to pursue from moment to moment. Researchers need to know only that *differences* in practices will always exist among the individuals and groups present, and that novel practices can arise at any time. These differences and novelties constitute a pool of possibilities for what practices may be carried forward in time by successive generations of people.

Furthermore, the contents of this pool of possibilities in any given historical instance does not take its shape because of anyone's prescience of what specific practices may come in handy except in the most immediate future. Nor does it take its shape from anyone's prescience about the consequences that different practices may have in changing circumstances beyond the most immediate future.

These considerations apply to all cultural practices, including stylistic practices, as Hill (1985) has noted. At any given time and place, people hold to ranges of alternative ways of shaping their artificial environments. Through observing each other's alternative practices and through innovation, people always have available a changing repertoire of practices from which to draw in their daily interactions. The content of this pool is not shaped by any ahistorical laws, only by people's actual histories of innovations and contacts with others' innovations. Accidents of innovation and contacts, and accidental sequences of these, thus play an important part in shaping stylistic repertoires in all settings.

Transmission of Variation

Cultural phenomena are defined by the existence of cultural mechanisms for the transmission of practices from one individual to another (e.g., Bourdieu 1977; Dunnell 1980; Boyd and Richerson 1985; Rindos 1985, 1986a, 1986b). The transmitted practices may be cognitive or behavioral or both. The mechanisms of cultural transmission boil down to a process we loosely term "symbolic learning," a process of which all humans are capable except the physiologically most handicapped. This is the human "capacity for culture" (Rindos 1985). It is because of this capacity that practices can persist beyond the lifetime of any single person.

What shapes the contents of cultural transmission from one historical setting to the next? Few biological limitations appear to exist for the kinds of cognitive and behavioral practices that people may perpetuate. At most, some limits may exist for the kinds of grammatical structures the human brain can accommodate. The human lifespan may also affect how often practices must be expressed in people's actions or in their symbolic records, in order for transmission to take place at all.

Cultural transmission takes its shape instead from the fact that, in any given setting, specific cultural practices always inhibit, allow, encourage, or otherwise affect the transmission of other practices (e.g., Boyd and Richerson 1985). All groups have practices that affect who among them may be exposed to or taught other practices, or that limit (whether by intent or not) the contact that their members have with other groups. Among stylistic practices, for example in pottery making techniques, direct teaching may take place primarily between parent and offspring in one historical case. In another case, the most skilled artisans may teach only the most skilled apprentices without regard

to any familial relationships. Graves (1981, 1985) documents a case in which age cohort relationships strongly affected the transmission of some stylistic practices.

Cultural practices can also affect the conditions under which different members of a community come into visual contact with each other and so have the chance to observe each other's cultural ways. Thus, cultural practices can affect the transmission of stylistic and other cultural practices. The learning/interaction school of style interpretation emphasized precisely these kinds of phenomena in its research program.

Further, any *changes* in the conditions that constrain cultural transmission in a given historical setting may change the pattern(s) of differential transmission of stylistic and other cultural practices in that setting. As both Dunnell (1978) and Hill (1985) have noted, for example, change in simply the numbers of people coming into contact with each other in a given setting can affect the rate of diffusion of innovations. Davis (1983) and Rogers (1983) discuss still other possible cultural constraints on innovation diffusion.

Cultural transmission thus takes place neither randomly nor always exclusively between parents and offspring. Consequently, understanding how and why different cultural practices persist over time requires knowledge about how people's existing practices actually shape or constrain cultural transmission in different historical settings. To be sure (e.g., Plog 1980, 1983; Braun and Plog 1982; Hill 1985), constraints on cultural transmission may not strongly affect stylistic variation in all settings. But explanations for specific cases of stylistic variation, continuity, or change still must take such constraints into account. To paraphrase Hill (1985:379–385) again, the learning/interaction school is not wrong but only partly right.

Selection: Differential Transmission of Variation

Why, then, in a historical setting over timespans of generations, do some cultural practices persist while others do not? Why do some practices gain or stabilize in statistical popularity while others decline or even disappear? The selectionist view of culture identifies two general classes of phenomena that shape the statistical popularity of alternative practices over multiple generations in all historical settings. These two are *cultural* and *natural* selection (Alland 1975; Dunnell 1980, 1982, 1986; Kirch 1980; Durham 1982; Rindos 1984, 1985, 1986a, 1986b; Boyd and Richerson 1985; Leonard and Jones 1987; Braun 1990, 1991a).

Cultural selection refers to the ways by which, in a given historical setting, people's existing beliefs and practices, and the timing and locational needs of existing practices, may (or may not) inhibit the kinds of innovations the people consider for potential adoption on even a trial basis. In effect, people's maintenance of some practices can inhibit their trying out other, alternative practices. Existing practices constitute an initial *filter*, which affects the likelihood that a given innovation will find any acceptance (see also Rosenthal, Chapter 10).

Cultural selection also refers to the ways by which people unintentionally perpetuate existing practices, and so rule out alternatives, by preferentially associating socially with others whom they find most familiar. By associating more with others of similar cultural practices, people keep those practices alive at the expense of alternatives.

Cultural selection may constitute only a very coarse kind of selection, however. At the very least, individuals always differ in their cultural practices and hence potentially in their openness to experimenting with alternative practices.

Natural selection acts on those alternative practices not excluded by cultural selection. Natural selection takes place simply because cultural continuity in any historical setting always depends on the persistence of groups through biological reproduction and social recruitment across multiple generations. That is, in order for practices to persist over time, they must be transmitted forward by self-perpetuating groups of people and their artifacts. Natural selection refers to any and all kinds of events

that disrupt the transmission of particular practices, or that disrupt the transmission of some particular practices more often than others and, in so doing, select against their perpetuation.

Natural selection shapes the numbers of people who persist in specific cultural practices, both absolutely and relative to the numbers of people holding to different practices in the same historical setting. Over time, alternative cultural practices in a given historical setting in effect “compete” statistically with each other for persistence or “replicative success” (Leonard and Jones 1987). This statistical sifting is not a matter of people necessarily intending to favor some practices over others. Natural selection happens through the actual rather than the intended consequences of people’s actions.

Specifically, some differences in cultural practices can result in differences in mortality and fertility patterns among different groups (e.g., Wagley 1969; Durham 1982). However, alternative cultural practices need not affect people’s biological reproductive success, in order to be subject to natural selection. Natural selection operates simply whenever people who follow different cultural practices become exposed to different kinds or levels of natural and social adversity as a result of their different practices.

Alternative cultural practices, for example, may expose their practitioners to different kinds and levels of competition from other groups; or affect their followers’ ability to sustain themselves in groups of adequate size for various cooperative activities; or affect their ability to reach decisions in a timely manner, resolve disputes without group fissioning, or negotiate alliances with neighbors. Alternative practices also may expose their practitioners to less material forms of adversity which involve people’s perceptions and approval of each other’s actions.

When alternative cultural practices differ in their effects, natural selection takes place. Natural selection directly shapes the numbers of people following the specific alternative practices at hand in a given setting. Clearly, though, such selection can take place only on the timescale of multiple generations of cultural transmission. Thus, the effects of natural selection accumulate only as transgenerational cultural continuity and change.

The idea of natural selection thus reintroduces the concept of “social practices” presented earlier, which emphasizes the effects rather than the intent of different practices. Natural selection acts on *any* cultural practices that have social effects in a given setting. Natural selection acts upon social practices according to how their effects differ from those of alternative practices available in that same setting.

SELECTION AND CROSS-CULTURAL REGULARITIES

The concept of selection provides a framework for understanding how transgenerational cultural continuity and change come about. Consequently, it also provides a framework for understanding how cross-cultural regularities might arise. I have reviewed these topics in two previous papers (Braun 1990, 1991a), and will only summarize them here as a prelude to illustrating them for the study of style and social communication.

Selection can produce cross-cultural regularities. It can do so as a result of the interaction of two phenomena. First, humans may share certain physical capacities and limitations shaped by the species’s common genetic heritage. Second, people may converge on ways of doing things that constitute similar optimal solutions to problems commonly encountered in people’s daily lives in all cultural settings. Together, these phenomena may result in people acting in similar ways no matter what their cultural heritage. However, nothing about selection guarantees that it will produce any such cross-cultural regularities or that all people must conform to them at all times.

The nature of selection, in fact, guarantees that cross-cultural regularities will express themselves at best only as very general tendencies across all of human culture and history. Selection happens only when different, alternative social practices differ in their effects on their own perpetuation. Further,

selection acts only on those social practices that the accidents of innovation and diffusion have accumulated as possibilities in any given historical setting. Thus, selection cannot force people to develop optimal ways of doing things, that is, ways that are optimally efficient. It can only act as a filter, increasing the statistical popularity of some ways of doing things simply because they worked better in a given setting than whatever other possibilities history has provided. As a result, people's social practices in a given setting need not consist of anything more than historically unique ways of doing things, that have perpetuated themselves over time.

We also cannot explain the occurrence of cross-cultural regularities by claiming any universal ability of humans to recognize and adopt objectively optimal ways of doing things. For the many reasons discussed earlier, people have no such culturally neutral prescience. Moreover, selection acts on the actual consequences of people's actions rather than on the consequences people thought they would achieve.

Selection is thus a highly nondeterministic and highly historical form of causation. That is, the concept of selection offers the researcher no basis for "predicting" events before they happen through reference to any inevitable regularities in culture or human behavior (Dunnell 1982, 1986). Instead, it focuses attention on the importance of unique histories in shaping people's cultural practices in all historical settings. The serendipity of history makes it far from inevitable (although not necessarily impossible) that people will converge on similar ways of doing things across all or even most cultural settings. The next section of this essay illustrates these implications specifically for the study of style and social communication.

SELECTION ON STYLISTIC VARIATION

Stylistic practices *can* have social effects. These effects arise because, whether intentionally or not, people can and do use appearances to help them assess the social identity of an object's artisan or owner, or assess social similarities or differences between themselves and others. Stylistic practices also can convey information on people's participation in larger sets of social practices, of which the stylistic practices are only a small part. People can use such information in deciding, consciously or not, how to act in each other's presence.

Nothing dictates that stylistic practices *must* have such social effects. However, when alternative stylistic practices *do* have different social effects, they necessarily will fall subject to cultural and natural selection. Across multiple generations, selection will then shape their statistical popularities. Selection will do so because of the actual rather than the intended social effects of the stylistic practices in question.

A researcher cannot explain specific instances of selection on stylistic practices, however, knowing only how selection acts on cultural practices in general. One also needs to know how selection can act on stylistic practices *in particular*, that is, how stylistic practices can have social effects at all. People experience style visually. Consequently, in order to understand how stylistic practices can have social effects, researchers need to consider how people experience visual phenomena.

Object Visibility

Objects must be visible in order to have social effects. Other things being equal, the larger an object and/or the longer the use-life of an object, the more consistently visible it will be to a more numerous audience (especially Wobst 1977; DeBoer and Moore 1982; Sackett 1982, 1985; Wiessner 1983, 1984, 1985; Hill 1985; Braun, 1991b).

Researchers commonly combine these points to assert that, cross-culturally, people choose different sized objects and/or objects of different use-lives to visually convey different kinds of social

information (e.g., Plog 1983). However, as Graves (1981:309–310), Plog 1983), and Hill (1985:368–369) note, ethnographic data do not always fit these expectations. This failure, I believe, stems largely from an inappropriate assumption that cultural causation is both deterministic and rooted in supposedly universal features of human intentionality. Carr (Chapter 6) and Rosenthal (Chapter 10) have discussed other reasons for failure.

The selectionist perspective entails a nondeterministic view of the relationships that may exist between object visibility and stylistic treatment. It is true that artifacts of different sizes and use-lives may differ in the sizes (and social composition, see below) of their audiences in a given setting. It is also true that artifacts of different sizes and use-lives may receive different stylistic treatments. When different artifact styles correlate with differences in artifact size and use-life, they may then also encounter different audiences. Stylistic practices that differ in their audiences can differ in their patterns of transmission and in their social effects, and therefore differ in the selective conditions shaping their persistence. Under some circumstances, then, selection can result in consistent relationships between the visibility and stylistic treatment of particular classes of objects.

The selectionist perspective, however, emphasizes that stylistic variation, continuity, and change depend on whether alternative stylistic practices have different social effects. It is important to recognize, therefore, that whether or not artifacts of different sizes and use-lives do indeed differ in audience size and composition and, hence, differ in their social effects, depends entirely on historical circumstances. Further, just because it is *possible* for alternative stylistic practices to have different social effects, it is not always *necessary* for them to do so. Whether or not alternative stylistic practices actually do have different social effects also depends entirely on historical circumstances.

Visibility of Stylistic Attributes

Objects that differ in appearance can differ in their social effects, further, only if the audience can discriminate the differences in question (e.g., Braun 1991b; Carr, Chapter 6). Consequently, explanations for specific instances of stylistic variation, continuity, or change must also take into account the visibility of stylistic attributes themselves.

Especially since Friedrich (1970), archaeologists have often assumed that a hierarchy of socially meaningful compositional detail always exists in people's stylistic practices (e.g., see reviews and comments by Muller 1979; Graves 1981; Plog 1983; Hill 1985; Jernigan 1986; Douglass and Lindauer 1988). Investigators also commonly analyze compositions as arrangements of decorative fields, which in turn contain additional fields or units of composition in successively finer detail, each with specific grammars of composition. They then assume that each level of compositional detail should contain information on a different level of social interaction between an object's artisan and/or owner and the object's audience.

There are reasons why archaeologists should expect such cross-cultural relationships to exist between the visibility of stylistic attributes and the kinds of social information that they convey. The human eye–brain combination cannot discriminate all levels of detail equally well at all distances. For example, a person of normal visual acuity can discriminate among letterlike characters that subtend only five minutes of a degree each, with line and gap widths within the character subtending only one minute of a degree each, when viewed from a distance of twenty feet (Records 1979:395–396). It thus seems likely that, other things being equal, the closer someone comes to an object, the greater the level of detail they can discern in the object's appearance. It also seems likely that, other things being equal, fewer people will see an object close-up than will see it at greater distances. Thus, on the average across many historical settings, larger stylistic attributes should have larger and perhaps also socially more diverse audiences—precisely as often assumed (e.g., Graves 1981; Plog 1983; Hill 1985).

Once again, however, ethnographic data do not consistently fit this expectation (Plog 1983; Hill 1985). I argue that this failure, too, stems mostly from inappropriate concepts of cultural causation (see also Carr, Chapter 6; Rosenthal, Chapter 10, for other factors). Specifically, the selectionist

perspective entails a nondeterministic view of the relationships that may exist between the visibility of stylistic attributes and the kinds of social information they may convey.

To be sure, people's social practices can affect the physical distances and frequencies over which they encounter each other's handiwork. Consequently, people's social practices can generate audiences of different sizes and social composition for different levels of compositional detail. As a result, the stylistic attributes of different levels of compositional detail can differ in their patterns of transmission and in their social effects, and so differ in the conditions selectively shaping their perpetuation. However, whether or not stylistic attributes of different sizes will indeed differ in audience sizes and social composition depends entirely on historical circumstances. Again, just because it is *possible* for alternative stylistic practices to have different social effects, it is not always *necessary* for them to do so.

Social Contexts of Style Visibility

People encounter and react to artifact appearances not simply as unique individuals but also as members of different social circles. Therefore, explanations for specific instances of longer-term stylistic variation, continuity, or change must also take into account how people's cultural practices affect the visibility of alternative stylistic practices to members of different *social categories* in the community. That is, explanations must consider the possible ranges of social identities of the people who would have encountered a given set of alternatives, and the activities that served as the context of those encounters. Archaeologists must consider such issues, in order to understand both (1) the mechanisms of transmission of stylistic practices in a given setting, and (2) the kinds of social effects potentially produced by different stylistic practices in that setting.

Herein lies a difficulty. Archaeologists cannot describe the social composition of the audience for different stylistic practices in a given setting without developing models of other aspects of people's social practices in that setting. Stylistic practices also may not have social effects in isolation from those of other social practices. Rather, they may constitute parts of closely interlocked and mutually reinforcing sets of social practices. Thus, archaeologists cannot effectively interpret the social reasons for stylistic variation, continuity, or change in a given setting in isolation from other studies of social practices and community organization in the same setting (see also Conkey 1987; Roe, Chapter 2).

Historical Uniqueness and Stylistic Drift

Cultural and natural selection operate only on alternatives that are actually present; for example, the alternative stylistic practices that a group of people happens to possess in its stylistic repertoire at a given time. These alternatives will exist in the repertoire at the specific time of interest simply as a result of the group's history of innovations, contacts with other people, and previous episodes of selection (see also Hill 1985). Human behavior, of course, probably almost always provides a rich pool of alternative practices upon which selection can operate; but even this must be stated as a probability, not a necessity.

Further, not all stylistic practices in a given setting need have social effects. Such socially neutral practices will not experience any selection. However, selectively neutral practices can instead experience stochastic variation over time relative to each other. Several authors have suggested that the resulting "random walks" in stylistic practices over time can result in stylistic drift; that is, in gradual, cumulative changes in the average appearances of artifacts in a given setting (Dunnell 1978; Graves 1981; Hill 1985).

Dunnell (1978) has suggested that stylistic drift may be distinguishable from selection-driven change based on differences in the shapes of their respective time-trend patterns. To my knowledge, this proposal has not yet received an empirical test. To be sure, archaeologists commonly cite Kroeber and Richardson's (1940) study of women's dress fashions as a study of stylistic drift. In fact, however, this study simply begs the crucial question. Differences in dress lengths in elite fashion can have

significant social effects, particularly as parts of larger sets of social practices. Selection operates precisely on such *differences* in effects among alternative characteristics. Hence, Kroeber and Richardson probably did not observe a case of stylistic drift, but rather a case of changing selection.

Graves (1981:307–315) has suggested that stylistic drift is most likely to occur among the least obtrusive aspects of stylistic variation. In my terms, he would be referring to stylistic practices with the smallest, least diverse, or least consistent audiences in a given setting (see also Sackett 1982, 1985; Hill 1985). Such a relationship does seem likely, on the average, because of the general constraints on human eye–brain physiology discussed above. However, for the many reasons also discussed above, this relationship is again not compulsory.

SUMMARY AND CONCLUSIONS

In this chapter, I argue that the causes of long-term, transgenerational cultural phenomena do not involve any cross-cultural, predictive regularities; nor is it simply a matter of the accumulation and interaction of intentional social action. Instead, investigators should seek to explain variation, continuity, and change in specific cultural practices on this scale as consequences of the interaction of three kinds of phenomena: (1) innovations in cultural practices; (2) transmission of alternative practices by cultural means; and (3) cultural and natural selection among alternative practices.

All three of these phenomena in any given cultural setting necessarily take their shape from unique histories of events and conditions (cultural, demographic, geological, and ecological), and the coincidences and interactions among them. However, this historicalness of cultural phenomena does not exclude the possibility of explaining what takes place. For timespans on the order of human generations, the concept of selection provides the appropriate explanatory framework. Cultural or natural selection takes place among alternative cultural practices whenever existing alternative practices have different social effects for their practitioners in their historical setting. Quite different concepts apply to the explanation of shorter-term subgenerational cultural phenomena.

Stylistic practices, as social practices, fall subject to these same principles. They also fall subject to limitations in human eye–brain physiology. These limitations constrain people's physical ability to discriminate visual phenomena depending on the size of the phenomena and the individual's distance from them. However, the fact that people can discriminate among artifact appearances at a given physical scale of encounter does not guarantee that they always *will* in any socially meaningful way. As a species, humans are capable of discriminating among objects with great visual acuity; but people do not always do so in similar ways from one cultural setting to the next.

Beyond the central concept of selection, no single set of explanations possibly can exist for explaining all specific instances of transgenerational stylistic variation, continuity, or change. For example, stylistic change can arise because changes in selective circumstances alter the social effects of alternative practices. Stylistic change can arise because people adopt a novel alternative practice, the social effects of which allow it statistically to out-compete older practices for perpetuation. Stylistic change can occur because people change their ways of transmitting their practices, including to their offspring. Stylistic change can result from changes in the physical visibility of the artifacts of interest, in the physical visibility of stylistic features on those artifacts, or in the size or social composition of the audiences encountering them. Finally, stylistic change can occur because selection acts on larger sets of interrelated social practices, which together include or exclude the use of specific symbolic representations. Any or all of these causes may happen at the same time.

Thus, I argue that serendipity and selection rather than any ahistorical laws or principles of decision making shape people's stylistic practices over transgenerational time. However, I do not also argue that social interpretations of transgenerational stylistic phenomena are impossible. Instead, I would argue that archaeologists need to rely much less on assumptions about cross-cultural regularities in order to develop interpretations of longer-term phenomena in specific prehistoric cases.

At best, assumptions about such regularities can provide only a starting point, from which interpretations must move on to more culturally and historically specific lines of inquiry. More importantly, I would argue that archaeologists need to discriminate more clearly among the concepts they use to explain phenomena at different temporal scales.

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Part III

Middle-Range Theory

Relating Form and Cause

Part III shifts our attention from the broad array of factors that can cause material style, and that were inventoried previously, to the various ways in which those factors can be expressed materially. The chapters in Part III build, test, and illustrate a coherent middle-range theory that bridges causal factors to resultant forms. The theory answers the question, “Which specific determinants of an artifact’s form are reflected in which of its specific attributes, and under what contextual conditions?”

Chapter 6, by Carr, begins by reviewing the history of ideas and practices in archaeology that have discouraged the building of middle-range theory about style and that have led to current uncertainty about the mapping of causal processes to resultant forms. Philosophical, theoretical, and analytical circumstances for the uncertainty are described. For example, most high theories of style have been developed without appropriate boundary conditions stipulating the kinds of formal attributes to which the theories, and the causal processes that they evoke, apply. This has led to the posturing of alternative theories as competitive when, in fact, some of them (e.g., the information exchange and social interaction theories) complement each other in the spectra of attributes to which they pertain. Another blockage to middle-range theory building has been the definition of style in terms of its causes, which are not archaeologically observable, rather than its observable material and contextual characteristics. Carr’s review of these and other issues in middle-range theory-building contrasts with other, recent archaeological reviews of style (Plog 1980; Roe 1980; Hodder 1982a; Sackett 1982; Braun and Plog 1982; Wiessner 1983; Conkey 1990). These have focused, instead, on high theory about the factors that determine style and epistemology.

Carr goes on to propose that because artifact forms reflect multiple processes of varying phenomenological levels, it is not possible to build any *single*, high theory of “the cause” of style (see also Conkey and Hastorf 1990:2–3). However, *integration* of diverse, high theories concerned with different processes is possible at the level of middle-range theory. Integration can be achieved by modeling how the different processes tend to be expressed in different ranges of formal attributes in given contexts.

Carr then outlines six tactics that are essential to both building middle-range theory on material style and analyzing material style. Each tactic is a response to one of the philosophical, theoretical, or analytical circumstances that has previously discouraged the building of middle-range stylistic theory. Three of the tactics are especially important. One is to widen the range of formal attributes that are considered so as to include all material traits that comprise an artifact, as opposed to only those attributes that are thought *a priori* to be stylistic. This total corpus of traits Carr terms the “design” of an artifact. This corpus sets the most basic limitations on form–process relationships, because the traits are organized in the context of each other as a system and constrain each other technologically.

A second important tactic is to order both attributes and potential causal factors hierarchically,

according to certain of their characteristics, in preparation for mapping the relationships between the attributes and their possible causes. Attributes can be ordered by their relative visibility, their relative placement in a hierarchy of manufacturing decisions, and their relative position in a sequence of production steps. This ordering is helpful because attributes that vary in these ways systematically have different physical and technological potentials for reflecting given processes. Processes can be ordered by their scale, intensity, whether they are active or passive, whether they are conscious or unconscious, and their cultural value (if any) for expression. This ordering is helpful because processes that vary in these ways differ in their potential material effects.

A third essential tactic is to use technological relationships among attributes—specifically, their decision order and production order—in addition to their visibility, to organize them hierarchically. This is necessary because the material style of an artifact is intrinsically embedded in its technologically constrained form, and because the processes that determine its style are manifested through technological processes (Sackett 1985).

Considering the various historical and tactical issues raised, Carr ends Chapter 6 with a definition of “material style” that is bent toward developing middle-range theory. Material style is defined in archaeologically observable, material, and contextual terms, following the art-historical tradition (Shapiro 1953). The definition is narrower than the one for “style” given by Roe (Chapter 2), which combines material and processual characteristics.

In Chapter 7, by Carr, a middle-range theory is built that bridges the formal attributes of artifacts of a class to the various possible causes of those attributes. The theory predicts the kinds of attributes that are most likely to be determined by and reflect certain causal factors. The theory is “middle range” in nature because it maps, via explicit empirical criteria, statics (material attributes) to causal dynamics (processes), allowing the former to be “identified” or “defined” with the latter (Binford 1977).

The theory specifies how to define a hierarchy of attributes and a hierarchy of potential causes using the several criteria mentioned above. The causal factors that are considered range widely, from technological through sociocultural to social-psychological, personal behavioral, personal psychological, personal physiological, panhuman depth-psychological, and panhuman physiological factors. Next, through a large number of bridging arguments, formal attributes at different hierarchical levels are associated with different, sometimes overlapping ranges of factors that might determine those attributes. Ethnographic and archaeological case studies that encompass many media are used to build and support the bridging arguments.

The bridging arguments that link causal factors and resultant forms in essence comprise boundary conditions for the various high theories of style that evoke those factors. The bridging arguments especially clarify how the social interaction and information exchange theories of style are complementary, rather than competitive as Braun and Plog (1982) drew them. Specifically, the two theories pertain to different but overlapping levels of formal attributes, which reflect the different causal processes of enculturation and communication that are respectively evoked by the two theories.

Finally, the middle-range theory suggests how various kinds of contextual information can be used to refine the potential processual meanings assigned to attributes. Some examples of these kinds of information include the scale and form of the spatial distribution of the alternative states taken by attributes; rates of attribute change through time; patterns of covariation among attributes through time; the differing distributions of different artifact classes; visual and other characteristics of the contexts of production, use, display, and deposition of the artifact class; and the culture-historical and adaptive milieux.

In considering such contextual factors, the proposed middle-range theory goes beyond the decontextualized uses of style in traditional normative archaeology and the New Archaeology, where styles were seen as “indicators” or “correlates” of social units (Conkey 1990:9–10). The theory bridges attributes to social units *through* both the dynamic processes that define and maintain those units and the contextual constraints that, in turn, define those processes. Moreover, the criteria that are used to define the hierarchy of attributes of a class of artifacts have contextual, case-specific dimensions as well

as universal dimensions. For example, the visibility of an attribute is defined not only in regard to its absolute physical properties, but also in relation to contextual parameters such as the viewing distances, spatial density, and use-life of the artifact of which the attribute is a part, and culturally learned patterns of perception.

Chapter 7 makes five additional contributions to style theory. First, it clarifies specifically how the decision order and production order of an attribute can constrain the range of processes it may reflect. Previous middle-range theoretic work has focused on bridging attributes to the processes that cause them via only the visibility of the attributes (e.g., Wobst 1977). In this way, the theory reinforces Sackett's (1982) contention that technology is the framework within which style manifests itself. At the same time, the theory goes beyond his lament (Sackett 1985) that style is "ubiquitous," "wherever the potential for isochrestic variation is to be found," and that particular interpretations of stylistic patterns are not implicit in them. Moreover, by considering the decision order and production order of attributes, as well as their visibility, the theory is capable of bridging attributes to a wider spectrum of processes, which include those pertinent to the artifact maker, alone (e.g., habitual methods of manufacture, personal preferences), as well as to the maker-viewer dyad (e.g., enculturation, communication, negotiation, projection). Later chapters by Carr and Maslowski, and Pryor and Carr, illustrate in detail how the decision order and production order of an attribute constrain the range of processes it may reflect.

A second way in which Chapter 7 contributes to style theory is by describing and citing evidence for an empirical, cross-cultural tendency for messages of social units of decreasing scale to be expressed—if they are expressed materially—in attributes of decreasing visibility. The units might include the regional interaction network, language group, society, social segments, the community, the family–artisan network, and/or the person.

Third, the chapter elucidates several reasons for this cross-cultural regularity. One significant reason hinges on an ecological–evolutionary argument. The relative "importance" of essential social units and their messages to the survival of a social system, and thus the relative value given to expressing those messages in more visible attributes, depends on the vulnerability of those units to external or internal stresses. In turn, in evolving human ecosystems, larger units are often more vulnerable in that they lay closer to the "edge" of the social system's adaptive organization, yet, having evolved more recently, may be structurally simpler and less well buffered from stresses. Thus, the messages of larger units commonly are given priority for expression in more visible attributes.

Fourth, the chapter introduces the concept of "message priorities." The many possible messages that an artisan might wish to express in an artifact must be ordered by their priority for expression. This is so because artifacts have a limited number of highly visible attributes that are effective for expressing messages. The priority given to various messages for expression in highly visible attributes depends on (1) culturally uniform values, world view assumptions, beliefs, and themes that form the "fabric" of a culture and that do not vary with the social situation in which the artifact class is used; (2) culturally uniform but situationally dependent values; (3) the artisan's personal values, preferences, motives, and strategies that are situationally dependent; and (4) the nature of the social situation in which the artifact is to be used or displayed (see also Wiessner 1988; Rosenthal, Chapter 10). Some characteristics of social situations that can influence the priority given to stylistically expressed messages include the situation's purpose, cultural nature (e.g., sacred, profane, liminal), the composition and number of its participants (e.g., males, females, elders, elite), and its tone in relation to personal or group motives, emotions, or conditions (e.g., fear, interpersonal or intergroup competition or cooperation, affluence).

The varying importance among cultures of the first three factors in governing artifact manufacture, and the situation-dependent nature of the second and third factors, are causes for exception to the cross-cultural tendency for the messages of social units of decreasing scale to be expressed in attributes of decreasing visibility. This understanding moves beyond Braun's (Chapter 5) argument that irregularities in cross-cultural relationships between artifact forms and processes result simply

from “serendipity” within “history.” Also, the idea that a social message can vary situationally in the priority and visibility of its expression is essential to any communication theory of style; however, it was not an aspect of Wobst’s (1977) seminal middle-range framework. Examples of how message priorities shift with the social situation are presented by Carr (Chapter 7), Rosenthal (Chapter 10), and Morris (Chapter 13).

The final way in which Chapter 7 contributes to style theory is by explicitly defining and distinguishing a number of concepts. First, the visibility of an attribute is defined in relation to physical, perceptual, cognitive, and contextual factors. Second, manufacturing decisions, production steps, and design grammars that employ tree diagrams are each distinguished. Third, a wide variety of decision hierarchies of various structures are defined. Their distinction is significant because decision hierarchies of different structure vary in the spontaneity and creativity that they admit in artifact production, and influence the degree of determinacy in form-process relationships. Fourth, active and passive stylistic processes, which vary in the degree of artisan control, are distinguished from conscious and unconscious processes, which vary in the degree of artisan awareness. Fifth, the distinction between additive and subtractive crafting processes is shown to be simplistic and misleading in characterizing media with respect to how causal processes map to resultant attributes.

Chapters 8, 9, and 10 (by Pryor and Carr, Carr and Maslowski, and Rosenthal, respectively), each illustrate and test certain aspects of the middle-range theory built in Chapter 7. Diverse media, including basketry, cordage, fabric, and wood carving, are explored. The chapters illustrate how the attributes of a population of artifacts can be arranged hierarchically in three ways, using the three criteria of attribute visibility, decision order, and production step. A solid understanding of manufacturing procedures and materials is shown to be essential to defining such arrangements. The chapters also document the predictable, moderate to strong correlation between attribute hierarchies arranged separately by the three criteria and how using all three criteria to construct one hierarchy allows a more refined and insightful ordering than relying on attribute visibility, alone. Specifically, the different criteria pertain to different constraints on form–process relationships (e.g., communication potential, message priorities, and artisan spontaneity and expression of the personal self).

The media chosen to explore these issues challenge our understanding of form–process relationships beyond what archaeologists have learned from ceramics, which have been a focus of past archaeological theory-building about style. This is so because basketry, cordage, fabrics, and wood carving differ fundamentally from ceramics and each other in the structure and direction of correlation of their attribute visibility, manufacturing decision, and production step hierarchies.

Pryor and Carr document the many processes that together determine the design of California Pomo baskets. They follow a seldom-used but insightful research design developed by Wobst (1977) and Wiessner (1983), whereby attributes of several levels of visibility are studied for their differing patterns of variation at several social scales. Different processes that operate at those different scales and their effects on basket design are thus revealed. The processes include personal preference, inspiration, and motor skills at the level of the individual; enculturation, life history, student–teacher power relations, and passive interactions at the family and interacting artisan levels; and shared culture history and passive interactions at the community and sublanguage group scales. The visibility levels of basketry attributes that are found to reflect these processes agree with predictions made by the middle-range theory built in Chapter 7.

Pryor and Carr’s chapter also explores three other topics that are essential to stylistic theory. The first is how contextual limitations on artifact visibility can affect the kinds of processes that attributes of varying visibility reflect. Pryor and Carr show how visible attributes of Pomo mush boilers distribute spatially as if they were, instead, physically obscure attributes because the boilers are used in the private domestic context. Similar examples of contextually limited visibility can be found in Braun’s (1977) analysis of prehistoric Woodland cooking pots and Hodder’s (1982b:54–56) study of hearths within huts of the Baringo.

Second, the chapter considers the nature of perception, complementing Washburn’s chapter in Part II. Some evidence is presented that Pomo Indians perceive basket styles in both a Gestalt and

partitive–analytical manner. Apparently, a Pomo viewer breaks a basket image down into discriminating attributes, but these are also perceived and given meaning in the context of each other as a whole constellation. New Guinea Maring appear to perceive the painted designs on their war shields in a similar manner (Lowman and Alland 1973:29,33).

Such evidence for partitive–analytical perception is essential to the validity of the middle-range theory presented in Chapter 7. The theory holds that different, visible attributes of an artifact may communicate different messages. This can be true and communication can be effective only if an artifact is naturally and unconsciously perceived partitively and is, thus, easily decoded into a set of constituent iconic images.

A third essential topic that Pryor and Carr discuss is the nature of enculturation. The authors point out that enculturation in a style involves more than learning, and cannot be taken out of context, as some archaeologists have done when modeling the effects of enculturation on style distributions (Wobst 1977; references in Plog 1980:115–117; Sackett 1982). The microdynamics of enculturation involve a number of processes and contextual constraints that affect the form, diversity, and spatial–temporal distribution of a style, and that should be considered in an integrated approach to style. Pryor and Carr, along with Roe (Chapter 2), Rosenthal (Chapter 10), and Lathrap (1983), have enumerated and illustrated these factors in detail. They include: (1) kinship, marriage, residence, and adoption patterns; (2) whether direct or hidden criticisms of artistic creations is the cultural etiquette; (3) the degree to which protective domains or “realms of protected deviation” exist (e.g., hidden places, receptive audiences, segregated or quarantined components of culture such as play or tourist art) where creative inspirations can be worked out before being unveiled to the public; (4) the relative prestige and power relations between teacher and student; (5) the relative prestige and power relations among coresiding blood and affine potential teachers; (6) age of learning; (7) the number of years of learning, as affected by cultural norms and circumstance; (8) sexual segregation and complementarity during the planning and production of artifacts; (9) subcultural differences between the sexes in their world views; (10) family life-cycle, history, and mobility, which affect learning continuity; (11) the personal history and sedentism of the artisan; (12) whether prototypes of various styles are archived for student reference after the teacher’s death; and (13) whether manufacturing procedures can be inferred after an artifact’s production, or only observed during production. In a stylistic analysis, many of these factors can be either the primary goal of reconstruction or an auxiliary parameter to be considered for its effects.

The chapter by Carr and Maslowski delves into more specific processes that can be indicated by various spatial and temporal patterns in cordage and fabric traits. Patterning in the initial direction of twist of cordage threads is shown to be useful for reconstructing learning pools, patterns of recruitment between societies, population migrations or stability, population replacements, and the spatial overlap of settlement systems. These reconstructions are possible because cordage twist direction is a poorly visible trait that usually reflects passive aspects of enculturation rather than active processes, and because the trait, once learned, tends to be retained by a craftsman habitually through life. The chapter also shows how contrasting spatial patterns of a hierarchy of traits of mortuary fabrics can indicate several things, including the spatial organization of social units and the nature of alliances between them. The setting for both the cordage and fabric studies is the prehistoric Ohio drainage.

As a foundation for these studies, Carr and Maslowski review two of the most common taxonomic systems for describing cordage (Hurley 1979) and fabrics (Emery 1980). They also critique the systems for their relevance to research aimed at reconstructing past processes. This is done by comparing the structure and attributes of these systems to the decision structure and attributes involved in manufacturing cordage and fabrics. Good concordance is found for Hurley’s system, but not Emery’s, which was explicitly constructed as a formal–structural rather than processual system of classification. Carr and Maslowski go on to offer the beginnings of an alternative system for describing fabrics in more process-relevant terms.

Rosenthal’s chapter further extends our understanding of the range of factors that determine

material style beyond those frequently considered by archaeologists. She explores the effects of religious and mythological themes, personal dreams, and acculturation on the visible formal attributes of masks of the Iroquois ethnomedical False Face societies. Rosenthal makes several important contributions to theory. First, she outlines several strategies for narrowing the range of interpretations that might be given to visible, iconological attributes. These are: (1) beginning with the broad possibilities predicted by the middle-range theory presented in Chapter 7; (2) noting the cultural context(s) in which the artifact class was used and considering the priorities that various kinds of messages would likely be given in that domain; (3) considering how the geographic and temporal distributions of the artifact class's attributes change as cultural context varies; and (4) extending the third strategy to the attributes of multiple artifact classes. Studying multiple classes, each in multiple contexts, allows repetitive themes of a culture, termed its "fabric" or "pattern" or "configuration," to be revealed.

Second, following Durkheim, Rosenthal theorizes how message priorities and their expression in visible attributes should shift as the context of use of an artifact class changes from sacred to profane domains. In sacred contexts, social and religious messages can be expected to be emphasized over personal ones. In profane contexts, a broad variety of messages, ranging from personal through social, political, or economic messages, might be expressed. Rosenthal documents such shifts in message priorities and their stylistic manifestations in False Face masks as their contexts of use changed through time from profane to sacred and vice versa. She calls the two kinds of shifts "veneration" and "degeneration," respectively. Examples of these two processes are the institutionalization of nontraditional masks, which were originally intended as jokes, within the Iroquois Acculturation Rite, and commercialization.

Third, Rosenthal considers some of the psychological processes that generate stylistic novelty and produce change through selection, in Braun's (Chapter 5) terms. These processes include dreams of the client as sources of inspiration of mask images, the selective memory of the dreamer, and the carver of the mask visualizing the dream image in his mind, based on the client's description of the image. Each of these internal psychological processes interfaces with, is constrained by, and/or modifies external cultural factors, such as extant myths and cultural themes that provide prototypes for dream images, or the limitations of wood carving technology. Thus, Rosenthal calls our attention to the fact that human beings and their stylistic products interface and are affected by both the inner psychological and outer material-cultural worlds (see also Carr and Neitzel, Chapter 14).

Plog's chapter augments the middle-range theory built in Chapter 7 by generalizing how three broad categories of processes are reflected in the contextual as opposed to the formal-technological qualities of attributes of artifacts. These processes are: (1) enculturation reflected in "isochrestic variation"; (2) the communication of social or personal identities through "symbolic variation" or "nonrepresentational art"; and (3) the communication of specific spoken messages through "iconographic variation" or "representational art." The distinctions highlight ones drawn earlier by Wiessner (1983, 1985) and Sackett (1982, 1985). Plog then clarifies some insights of Wiessner (1985), that the three categories of processes can be distinguished archaeologically by the rates of change of attribute state frequencies through time, the synchronic strength of association among attributes, and the form of the regional and local spatial distributions of attribute states. The attributes reflecting the processes could pertain to the same or different artifact classes. Plog's chapter, like Chapter 6, emphasizes that the design of an artifact is not a unitary phenomenon.

Plog goes on to critique various approaches to artifact classification and style analysis, in light of the several processes that an artifact's design may express. In particular, he evaluates well-established, hierarchical, multivariate systems of attributes for describing ceramics relative to Jernigan's (1986) nonhierarchical, schemata-based system. Plog finds hierarchical systems more appropriate to processual research because they are open-ended, explicit, and concord better with linguistic models of stylistic structure. They also allow sherds to be studied, rather than requiring whole vessels, and thus permit larger samples.

Plog ends his chapter by applying the distinctions he makes between isochrestic, symbolic, and iconographic variation to ceramic stylistic changes in the northern Southwest United States. Plog poses that ceramic styles shifted between A.D. 700 and 1100 from isochrestic to symbolic to perhaps iconographic in nature, based on the rates of change, the strength of association, and the spatial distributions of ceramic attributes. The proposed shifts are expectable, given demographic, residential, sociopolitical, and subsistence changes in the northern Southwest over this time.

In conclusion, the attempts made in Part III to build and test middle-range theory that bridges specific kinds of artifact attributes and classes to specific ranges of causal processes stand apart from the recent trend in archaeology to focus primarily on processes. Most debates about style during the 1980s centered on paradigmatic differences over which factors determine style, rather than the kinds of attributes and classes that reflect certain factors (e.g., Braun and Plog 1982; Hodder 1982b; Conkey 1984; Sackett 1985; Wiessner 1985). These debates did not continue the seminal beginnings to the development of middle-range theory that were made by Hardin (Friedrich 1970) and Wobst (1977). It is hoped that Part III helps to redirect archaeology to the question of the material, stylistic reflections of past processes and conditions.

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Chapter 6

Building a Unified Middle-Range Theory of Artifact Design Historical Perspectives and Tactics

CHRISTOPHER CARR

All growth involves integrating apparent opposites.

ANONYMOUS

In a benchmark article on artifact style, Polly Wiessner (1983:273) lamented over the inability of archaeologists to predict, *a priori*, the particular formal attributes of an artifact that reflect specific behavioral processes, such as social interaction or the communication of identity. She concluded from her rigorous analysis of Kalahari San projectile points that relationships between process and form appear to result from historical events rather than to follow coherent principles.

Other seminal archaeological literature of the past decade has reiterated this uncertain relationship of process to form. Both empirical and theoretical considerations have led to this position. For example, Sackett concluded, after years of studying Paleolithic stone tools, that stylistic correlates of social affiliation can occur in any material attribute that varies and provides choice in the manufacturing process. Style is “ubiquitous” (Sackett 1982:105; 1985:157). “I hold that there presently exist no trustworthy pan-cultural stylistic patterns at all, that every culture may play the style game by rules unique to itself, and that consequently I am unable to propose any universally valid conventions for isolating style” (Sackett 1986:631). More theoretically driven, Hodder (1982a, 1982b:183, 1982c) argued that patterns in formal attributes arise in historically particular ways and can be interpreted only through diachronic contextual analysis. In turn, Wiessner, Sackett, and Hodder’s views echo earlier conclusions by ethnologist Fredrik Barth (1969:14) on the indeterminant, historically particular way in which ethnic groups signify themselves: “One cannot predict from first principle which (cultural) features will be emphasized and made organizationally relevant by the actors” when marking their ethnicity and ethnic boundaries. Finally, from a much broader, epistemological

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perspective, Conkey and Hastorf (1990:2) concluded that “. . . it is hard to imagine how there could be any single, general, comprehensive theory of style.”

In contrast to these recent views of style, this chapter and Chapter 7 suggest that the association between the form of material culture and the processes that can influence form is more systematic than has been envisioned, although less deterministic than proposed in earlier, positivist frameworks (e.g., Wobst 1977; Braun and Plog 1982). The chapters define the general hierarchical and technological nature of the relationship between form and process, thoroughly trace specific relationships between particular aspects of form and particular causal processes, and build a unified, middle-range theory that links aspects of form to processes. This chapter lays the groundwork for building the theory by evaluating past approaches that archaeologists have taken to studying material style and by presenting alternative approaches that are more conducive to theory-building. The middle-range theory is then built in Chapter 7.

This chapter has three parts. First, the historical roots of recent ambiguities and debates in archaeology over what constitutes material style and what determines it are delineated. Second, some broad perspectives and tactics for overcoming these problematic circumstances and for guiding the building of middle-range theory about style are offered. Third, an explicit definition of material style is presented, based on these discussions.

CURRENT PROBLEMS IN THE STUDY OF MATERIAL STYLE AND THEIR HISTORICAL ROOTS

The uncertain relationship between form and process of which Wiessner, Sackett, and Hodder have spoken is in part real. It has both processual and contextual reasons (Barth 1969; Hodder 1982a; Carr and Rosenthal 1986; Rosenthal, Chapter 10; see below). However, it is also in part artificial, deriving from the historical manner in which fundamental postulates about style have been constructed, postured, and have come down to archaeology today. Philosophical, theoretical, and analytical circumstances have each led to our current dilemma.

A Philosophical Circumstance

Current archaeological theories and models about style are problematic philosophically because they lack appropriate “boundary conditions” (Hemple 1966:76), which define the limits of their applicability. This is a common problem of logic in the social sciences in general. Specifically, each of the major archaeological schools of thought on style, including the social interaction, information exchange, isochrestic, and social–dialectical/historical–contextual schools, are drawn today as if they pertain to *all* formal attributes. However, each school focuses on only a subset of all the factors that determine material style, different schools consider different subsets of factors, and these may operate at only some and varying formal levels. Consequently, none of the theoretical approaches, alone, has systematic, cross-cultural predictive power (see also Braun, Chapter 5).

To advance archaeological theory on material style at the middle-range level, it is necessary to define boundary conditions for each current theory of style by stipulating the kinds of formal attributes to which it pertains. The unified, middle-range theory of style functions in this way.

Theoretical Circumstances

One manifestation of the above philosophical problem at the level of theory is that different theories of style, and the determining factors upon which they focus, have been postured as competing rather than complementary. For example, Plog (1980:121) and Braun and Plog (1982:511), augmenting a dichotomy drawn by Wobst (1977), presented the social interaction and information exchange

theories as directly competing in a number of assumptions (Table 6-1). Most important, the social interaction theory is characterized as assuming that the style a person uses in making an artifact is that learned during childhood under the constraint of social and tutorial norms. In contrast, the information exchange theory is characterized as assuming that the employed style is a conscious decision and an adaptive response in relation to ecological, social, or individual conditions or needs at the time of artifact production and/or use. Some examples of such needs include symbolizing the group as a population within which risk is pooled (Wiessner 1983:272) and demarcating social and territorial boundaries between competitive groups. Based on the alternative, competing assumptions of the two theories, competitive test implications were drawn and were evaluated against the *same* formal attributes by Plog, and Braun and Plog.

This match of passive, normative artifact production against active, communicative artifact production as the determinant of stylistic patterning is clearly artificial. Neither kind of production process holds universally for all of material culture and many kinds of artifacts come into form through both processes (e.g., Roe, Chapter 2; Pryor and Carr, Chapter 8; Rosenthal, Chapter 10). There are also other determining processes (see Carr, Chapter 7:Table 7-2) that Wobst, Braun and Plog, and Plog do not consider. In sum, *the appropriate question is not which theory of style is “right” but, rather, which kinds of formal attributes can reflect which kinds of processes—enculturation, communication, or other processes.* The kinds of objects that can reflect those processes, and the kinds of behavioral and material contexts in which those processes operate, are of equally essential concern (see Neitzel, Chapter 12; Morris, Chapter 13), but less to the point of this chapter and Chapter 7.

The interrelated problems of not defining boundary conditions for theories of style, and

**Table 6-1. Contrasting Postulates and Expectations
of the Information Exchange Theory and Social Interaction Theory of Artifact Style**

Social interaction (normative) theory	Information exchange theory
Style has a <i>psychological function</i> . It reduces the amount of design variation that humans, as members of society, must react to, and prevents cognitive information overload (Kroeber 1948:329). Thus, style ultimately pertains to the <i>individual</i> level.	Style has an <i>adaptive</i> function. It transmits information about group affiliation, individual states of being, ownership, etc. This makes social intercourse predictable. Thus, style pertains to the <i>social</i> level.
Style is used <i>passively</i> . The style employed by an artisan is that learned in childhood through enculturation.	Style is used <i>actively</i> . It is manipulated by the artisan to express something. It reflects the current social or individual conditions or needs that must be communicated at the time of artifact manufacture and use; i.e., it reflects the “social contexts of production and use.” These comprise an adaptive milieu in which certain styles are selected.
Style reflects traditional <i>norms</i> (constraints) about the proper appearance of an artifact.	Style reflects active <i>decision making</i> . A style is chosen to express a particular message at a particular time.
Emphasis is on <i>similarities</i> in style which reflect cooperating individuals who share norms. Hence, the framework is called the “social interaction” theory.	Emphasis is on <i>dissimilarities</i> in style which communicate different messages and identities.
No equivalent.	Messages of group affiliation will be invested in artifacts that: (1) are visible, in being used in contexts where they are seen; (2) are used frequently in multiple contexts; (3) are used in contexts with multiple social groups, where these contrasts are expressed; and (4) have long use-lives.

posturing potentially complementary theories as competing, have proliferated since the debate over the social interaction and information exchange theories. Sackett's (1982, 1985) definition of the isochrestic and iconological theories, which respectively emphasize enculturation versus communication as the determinants of style, is a close replay of the contrast that Braun and Plog drew between the social interaction and information exchange theories. Similarly, Wiessner (1984, 1990) and Hodder (1982a) have offered their social-psychological and social-dialectical theories of style in contrast to the information exchange theory. Wiessner and Hodder respectively posit the social creation of self-identity and sociopolitical strategies for action, rather than social adaptation through communication, to be the causes of style. All of these theories have been constructed without giving due consideration to the formal attributes that might or might not reflect the causal processes they emphasize.

A second theoretical circumstance that has led to uncertainty about the relationship between form and process is that current renditions of archaeological theories of style largely lack middle-range theory. They do not specify the kinds of formal variables and observations (items) that might reflect various causal processes and that are relevant for studying such processes. Instead, current approaches, and debates over them, have focused on the higher theoretical issues of the factors that determine style and on the interpretation of stylistic variation in terms of those factors. In contrast, any satisfying theory requires propositions at both the high- and middle-range levels (Hemple 1966; Binford 1977).

The lack of middle-range theory in current approaches to style has not always been the case; it is the product of recent intellectual history. Wobst (1977), in constructing his information exchange theory, located what he saw as the ultimate causes of style content and change in the processes of ecological and social adaptation through communication. However, he also clearly specified the kinds of artifacts that are most likely to bear stylistic messages. Four operational criteria for selecting relevant artifact classes were named. These are the visibility, frequency of use, contexts of use, and use-life of the artifact class (Table 6-1). The first three criteria permit communication. The last is necessary for communication efficiency and, thus, supposedly for the directed evolutionary selection of styles. The last criterion has not stood up to ethnographic tests (Hodder 1982a; Wiessner 1984:229, 1985:162).

Wobst's middle-range principles were complemented by Hardin's (Friedrich 1970). Whereas Wobst specified the kinds of *observations* that are relevant to analyses of stylistic communication, Hardin (Friedrich 1970) called attention to the kinds of *variables* that are relevant to analyses of either stylistic communication or social interaction. Hardin showed ethnoarchaeologically that stylistic attributes that are highly visible physically, and that are simple and more easily perceived from a distance and at a glance, are more readily copied. Thus, they diffuse quickly and widely through a community. In contrast, attributes that are less visible or that are complex and are perceived and reproduced only through close study and work among interacting artisans, diffuse more slowly and locally. Consequently, highly visible attributes tend to reflect communication among more distant parties, whereas less visible attributes tend to reflect more stable interaction networks among artisans and kinpersons, who work closely together.

Braun and Plog (1982:510; Braun, Chapter 5) and Voss (1982) continued Wobst's and Hardin's concern for middle-range theory and elaborated certain arguments that bridge process to form. In contrast, other influential authors narrowed discussion to primarily the processes that determine style. Conkey (1978) followed Wobst's idea that style can communicate identity and can promote socio-cultural integration and differentiation, and applied it to explain artistic developments of the Upper Paleolithic and to track the evolution of cognition and the sense of self. However, the qualitative, broadly brushed data that were available to her did not encourage the construction of middle-range theoretic bridges. Through a series of subsequent articles (1984, 1990), her concerns with style have increasingly centered on social theory, the social processes behind style, and the paradigmatic assumptions implied by style theories. These issues, not middle-range theory, have been her forte.

Similarly, Sackett's thoughtful articles on style and lithics began with (Sackett 1968) and have

continued (Sackett 1977, 1982, 1985) to center on problems of process. These issues include the discrimination of style from function and the relationships between these and technology. Sackett also evaluated the degree to which lithic formal variation is actively used for symbolic communication (iconographic style) rather than simply reflects enculturation (isochrestic variation).

Wiessner's (1983, 1984, 1985) research narrowed even further the processes considered to determine style. She came to focus on only two kinds of messages that are expressed stylistically, as opposed to the much broader range outlined by Wobst (1977: Table 1). These are the messages of social identity and individual identity, which are transmitted respectively by "emblemic" and "assertive" style, in Wiessner's (1983) terms, or "protocol" and "panache" in MacDonald's (1990).

Wiessner (1983:258) did reiterate Wobst's and Hardin's criteria for selecting objects and attributes that are relevant to communication. However, she did not apply these criteria *a priori* in her analysis of San projectile points (Wiessner 1983) and turned, instead, to largely contextual, data-specific patterns to discriminate emblemic and assertive formal variation. These patterns include the profile of an attribute's change through time and its spatial distribution (Wiessner 1983:259, 1985:162, 165; Plog, Chapter 11). Wiessner (1983:259) understood that both emblemic and assertive messages can be encoded in the same artifact with different attributes, but did not see that these messages generally are given different priorities culturally and thus tend to be expressed formally in different predictable ranges of a hierarchy of attributes.

The debate between Sackett (1985) and Wiessner (1985) pushed both authors toward specifying criteria that correlate material form with behavioral process. However, the debate largely replayed their concern for defining the specific processes that determine formal variation and their focus on contextual, data-specific patterning. In trying to grasp whether formal variation in San projectile points results from passive enculturation or active communication, and comprises isochrestic variation or iconographic style, both researchers turned to verbal comments made by ethnographic informants and to certain data-specific, context-bound criteria, such as formal diversity or standardization through time. The more context-free criteria that Wobst and Hardin introduced, such as attribute visibility or complexity, were not evoked.

Finally, Hodder's contributions (1982a, 1982c, 1990), like Conkey's, have focused on paradigmatic assumptions about culture, society, and stylistic behavior, and on the processes that determine style, rather than middle-range theory. Culture and style as structure, code, and symbol, the culturally and historically particular meanings of symbols, contextual relativity, style as a guiding template for social action rather than simply a medium of communication, social dialects, and the power of style have been the primary dimensions of his investigations.

One manifestation of the current emphasis on processes that determine style rather than on middle-range theory for bridging process to form is the manner in which some authors have come to define "style." Traditionally, in art history, anthropology, and archaeology (Shapiro 1953:289; Kroeber 1957; Gardner 1970), style has been defined in material and contextual terms. A style is characterized by its forms, relationships among forms, part-whole relationships, and/or Gestalt-perceptive qualities, and, to some extent, their consistency and coherence in time-space. In contrast, Conkey, Wiessner, Sackett, and Hodder have defined style in processual terms. Conkey (1978:66) initially viewed style as "a conceptual process, a cultural code that produces (formal) variability . . . and that relates to the social context of manufacture and use." More recently, she has stated that beyond material patterning, "Style is also ideas, intentions, and perceptions" (Conkey and Hastorf 1990:2). Wiessner (1983:256) defined style as formal variation that is recognized not by its material traits but, rather, by the fact that it "transmits information about personal and social identity." Her definition is an elaboration of Wilmsen's (1974:93), who saw style as "the material expression of social distinctiveness between groups." Conkey and Wiessner's approaches to defining style also have their basis in the work of Wobst (1977), who subtly shifted the phenomenon of interest from "style" (form) to "stylistic behavior" (process) in the course of his seminal paper. Sackett (1985:157) also distinguished style processually. For him, style is socially bound patterns in material culture that result from consistent

choice among equally viable manufacturing options. Finally, Hodder (1990) discriminated style from other, patterned “ways of doing” in part by defining it as processes. For Hodder, “style is power,” in that it allows control over meaning as it links an individual event and social context to an interpreted, general practice (Hodder 1990:46, 51). Style also “involves social strategies” and is “interpretive and evaluative” (Hodder 1990:46).

Lechtman's (1975:6–7) concept of “technological style” similarly focuses on the processes that determine material patterning rather than material patterning, itself. A technological style is the *emic* “style” of the technological activities and behaviors that produce an artifact. Lechtman's concept of technological style shifted the domain of style from material patterns to behavioral patterns, just as Kroeber (1957) earlier and Conkey and Hastorf (1990:2) and Hodder (1990) later expanded the concept of style from material patterns to cultural patterns and configurations.

These processual definitions of style pose two problems for archaeologists. First, because the definitions are not operational, that is, because they are not expressed in or translated into terms of archaeological observables, logical tautologies arise when they are applied to data. Interpretations of formal variation must be laid upon data rather than inferred from the data and some operational definition of style. Sackett (1985:159) keenly notes this logical problem in Wiessner's work and Wiessner (1990:111–112) finds the same problem with Hodder's (1990) work. To overcome this difficulty, a materially and contextually based definition of style is reintroduced below.

A second problem with some of the above definitions of style is that they combine causal processes and resultant forms within one concept. This again creates logical tautologies when formal variation is interpreted processually. To overcome this difficulty, resultant forms and causal processes are clearly distinguished in the definition of style and in the middle-range theory built below.

Analytical Circumstances

Ambiguity about the relationship between material style and its determining factors has also arisen from the nature of the data that have been used in certain key stylistic analyses. The empirical archaeological support that Braun and Plog (1982:509; Plog 1976, 1978:6–12) found in favor of the information exchange theory over the social interaction theory of style, rather than the complementarity of the theories, does not stem from their relative truth value and whether style is active or passive. Rather, it arises from the particular level of style attributes that were analyzed. Braun (1977:Figures 7, 8), Plog (1976, 1977, 1978, 1980), and Whallon (1968:226)—whom Braun and Plog cite in support of their position—each used more visible, discrete design elements and configurations, which are relevant to stylistic communication. They did not study the less visible nuances of style, which may reflect interaction (Friedrich 1970). Consequently, Braun and Plog's tests of the two theories are analytically biased toward communication processes and an erroneous acceptance of the information exchange theory over the social interaction theory. Had Braun and Plog analyzed attributes of a wide range of visibility, multiple spatial patterns for different attributes would probably have been found and the complementarity of the two theories might have been revealed. This has been the case in other studies where attributes of diverse visibility have been analyzed (Friedrich 1970; Voss 1982; Pryor and Carr, Chapter 8; Carr and Maslowski, Chapter 9).

Similarly, the formal attributes analyzed by Wiessner (1983:263–264) are primarily discrete traits or modal continuous traits that are visible and have communication potential. Thus, it is not surprising that Wiessner could not discriminate the characteristics of attributes that carry messages versus those that do not, or the characteristics of traits that carry messages of personal identity versus social identity. Again, analyzing attributes of a wider range of visibility might have clarified matters.

In sum, current uncertainty among archaeologists about form–process relationships is attributable, in part, to a variety of historical circumstances that have obscured or led attention away from

such relationships. The uncertainty does not arise entirely from the nature of style and the free mapping of process into form that some archaeologists have concluded.

GENERAL PERSPECTIVES AND TACTICS FOR ADVANCING MIDDLE-RANGE THEORY ON MATERIAL STYLE

Since the mid-1960s, archaeological ideas about style in material culture have become increasingly splintered into different “schools,” with sometimes increasingly narrower definitions of style and interpretive goals. This divergence in archaeological concepts of style has been productive to the extent that it has led to the study of many different facets of formal variation and many causal factors. The complexity of style and its causes and roles have been revealed.

However, in order to progress further theoretically and to ferret out the general relationships between form and process, it is necessary to integrate these different threads into some coherent, logical fabric and to broaden our perspective (Voss 1980). Theory building at the middle-range level, which would bridge form to process and would place operational boundary conditions on the high theories of style, is an appropriate level for seeking integration.

In preparation for this theory building, this section outlines some general tactics for integrating the currently narrow and divergent approaches to material style. The discussion will, in turn, lead naturally to an explicit operational definition of material style.

Current approaches to style can be integrated and broadened along six dimensions, which comprise six tactics for building a unified, middle-range theory. These tactics are: (1) widening the range of “formal” attributes that are considered; (2) widening the range of causal processes and constraints that are addressed; (3) taking a hierarchical perspective on the organization of attributes and their determinants; (4) taking a technological perspective as the framework within which style is analyzed; (5) clearly distinguishing causal processes in the systemic domain from resultant forms that exist in either the archaeological or systemic domains; and (6) taking a cross-media perspective. These same tactics are also used to test and illustrate the unified theory in subsequent chapters (Pryor and Carr, Chapter 8; Carr and Maslowski, Chapter 9; Rosenthal, Chapter 10).

Widening the Range of Attributes. Perhaps the most fundamental tactic that is necessary for integrating the diverse archaeological theories and approaches to style is to widen the range of attributes that are considered. In order to reveal the empirical characteristics of those aspects of formal variation that correlate with specific causal processes of interest (e.g., enculturation, communication of identity), and in order to understand why such correlations occur, one must step back and consider *all* material traits that comprise an artifact and that potentially reflect those processes. Both those traits that correlate with a process of interest and those that do not must be studied. This is a common statistical strategy (see Parker [1985:175] for an analog in revealing the processes that produce settlement patterns). Attributes of diverse visibility, of multiple levels within a manufacturing decision hierarchy, and of diverse stages in a production sequence should be studied.

This tactic is necessary because it is the total corpus of traits of an artifact, and the processes responsible for them, that comprise the material and processual *context* within which specific relationships between form and process are generated. In particular, it is the organization of traits in the context of each other as a system and as constrained by technology (raw materials and production procedures) that sets the most basic limitations on form–process relationships (Carr, Chapter 7).

The set of all material traits that comprise an artifact can be called its *design*, as in art, architecture, and engineering (see also Schiffer 1983). The design of an artifact encompasses such properties as its morphology, colors, decorations, texture, mass, chemistry, and engineering properties. The design of an artifact includes more than its “formal variation,” which strictly refers to morphology alone, and

much more than its “style,” which various archaeologists have defined in different restrictive ways. Figure 6-1 illustrates the concept of design in relation to formal variation and some other archaeological concepts about style. It is the design of artifacts, rather than only their formal variation or “style,” which is relevant to building middle-range theory on style.

The concept of the design of an artifact can be extended to apply to a population of artifacts of some class. In this case, the design of the class includes all attributes, attribute states, and their combinations that comprise the class.

Widening the Range of Causal Factors. Another fundamental tactic that is necessary for integrating theories about style is to widen the range of causal factors that are considered. The processes that can generate a style and the contextual conditions that influence the pattern that processes take are very great. They range from ecosystemic and technological kinds of factors through sociocultural and social–psychological factors to personal psychological and physiological factors and panhuman depth-psychological and physiological factors. Both active and passive, conscious and unconscious factors pertain. (Specific factors are enumerated in detail in Table 1-1 of Chapter 1, Tables 7-2 and 7-3 of Chapter 7, and Table 8-1 of Chapter 8).

This broad universe of factors that determine material style contrasts with the narrower and varying domains of study that have been established in different archaeological schools of thought about style. Table 6-2 summarizes the range of processes considered by the major current schools, the historical shift that has occurred in the kinds of processes that the schools address, and the complex overlap among the schools. These patterns make it clear why it is so difficult at this time for

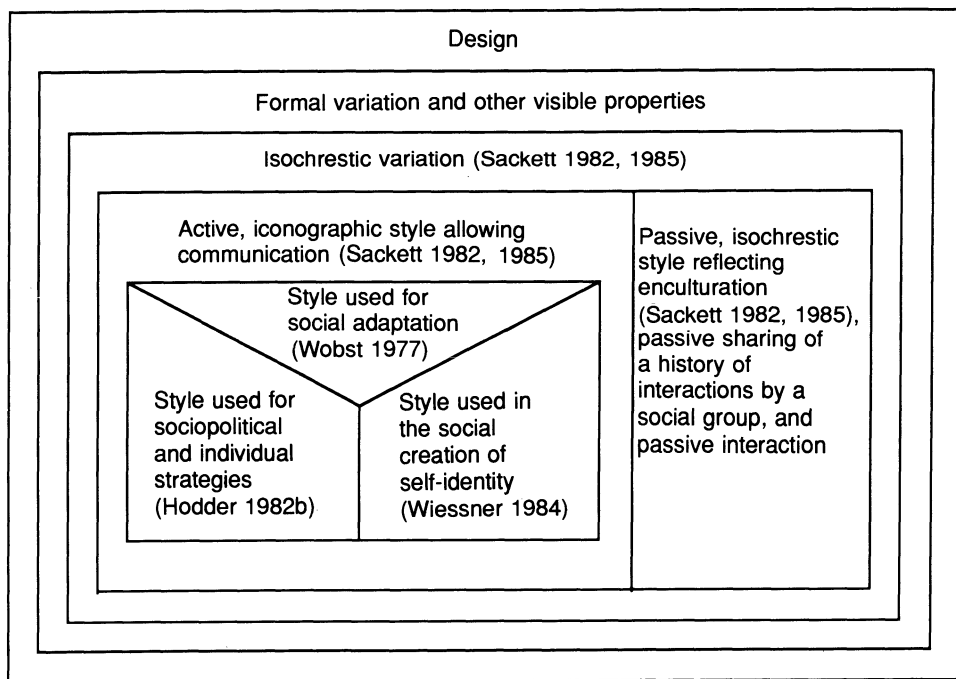


Figure 6-1. The design of an artifact, or a population of artifacts of a class, encompasses its/their morphology, colors, decorations, textures, and chemical, physical, and engineering properties. “Formal variation” (morphology) and some archaeological concepts of style are subsets of design.

Table 6-2. Different Archaeological Schools of Thought Emphasize Different Processes and Constraints that Determine an Artifact's Design

School of thought	Social interaction	Isochrestic	Technological style	Information exchange, iconological	Structural, contextual, symbolic, social-dialectics
<i>Process/Constraint</i>					
Utilitarian functional constraints		+			
Technological (procedural and raw material) constraints		+	+		
Active, conscious communication of social identity and messages			+	+	+
Active, conscious communication of personal identity or messages				+	+
Active manipulation of the social order and justification of social strategies					+
Active, unconscious projection of metaphoric information on the social and cosmological orders			+		
Passive social norms, passive enculturation, and diffusion	+	+			
Passive, personal habitual methods of manufacture and motor skills	+	+			
<i>Approach</i>					
Social interaction	<i>Some Contributors</i> Deetz (1965), Whallon (1968), early Leone (1968), early S. Plog (1976)				
Isochrestic	Sackett (1971, 1977, 1982, 1986)				
Technological style	Lechtman (1975)				
Information exchange, iconological	Wilmsen (1974), Wobst (1977), Conkey (1978, 1980), Braun (1977), S. Plog (1980), Braun and Plog (1982), Wiessner (1983, 1984, 1985)				
Structural, contextual, symbolic, social-dialectics	Hodder (1982a, 1982b), Braithwaite (1982), Leone (1984)				

archaeologists of differing paradigms to discuss style, even when establishing their positions relative to intellectual history.

In order to reveal and understand the correlations that occur between design attributes and their determinants, and in order to integrate theories about style, it is necessary to step back and consider all potential determinants, just as it is necessary to consider all material traits. Only then can middle-range theoretical arguments be built and subsequently be used to justify the interpretation of specific attributes as the product of specific processes. For a researcher to focus on only those processes that are of interest is to invite the laying of interpretation upon form rather than the deriving of interpretation from form and middle-range theory. The result is a tautology. This is currently a common problem with "iconological" (Wiessner 1983) and "social-dialectical" (Hodder 1982a) interpretations of material style (Sackett 1985:159).

There are several fundamental ways in which the list of processes enumerated in Chapters 1,

7, and 8 is broader than the array of processes recognized by various schools of thought on style and is essential to an integrated theoretical approach. First, the listed processes are not restricted to active communication (Wobst 1977; Wiessner 1983) or active social-symbolic strategies (Hodder 1982a, 1982c). Passive processes such as enculturation, social interaction, and shared culture history are pertinent. Second, the active processes that are listed are not restricted to the communication of social and individual identities (Wiessner 1983; MacDonald 1990). Rather, they also include the communication of a much wider range of messages, which Wobst (1977), Roe (Chapter 2), Pryor and Carr (Chapter 8), and Rosenthal (Chapter 10) have considered. Finally, included among the active stylistic processes that define social groups of various scales are not only boundary maintenance (Wobst 1977) but, also, within-group cooperation.

The call made here to widen the range of causal factors that are considered in studies of material style implies that a broad spectrum of behavioral and natural scientific theories must be admitted into the study of material style. Selectionist-evolutionary, social-psychological, symbolic interactionist, psychological, and depth-psychological theories have been given little attention in theory about material style, yet are very pertinent (see Carr and Neitzel, Chapter 1:Table 1-1, Chapter 14). Also relevant, but not privileged, are recent developments in sociocultural theories of practice, which give insight into the active and creative uses of material style (Hodder 1982c:7–9; Conkey 1984, 1990:12–14).

Taking a Hierarchical Perspective. A third strategy for integrating theory about style is taking a hierarchical perspective on the nature and organization of attributes and their determinants. Not all attributes are “created equal,” in the sense that not all attributes have the same physical and technological potentials for reflecting any kind of process. Nor are all processes equal in their scale, intensity, value, and material effects.

To accommodate these basic differences, it is possible to envision both the attributes of a population of artifacts and their potential determining factors as being hierarchically ordered according to explicit criteria (Carr, Chapter 7). In turn, the hierarchical organization of both puts fundamental limits on how form and process can possibly interrelate and clarifies these relationships. The bulk of Chapter 7 describes these mapping relations.

Taking a Technological Perspective. Another strategy that is essential to integrating style theory is taking a technological perspective, where technological factors are used to define the skeletal framework for analyzing design and style. Technological factors include the physical nature of raw materials, their engineering properties, and the nature of manufacturing techniques. These are just as important in determining how a style is manifested in its content and structure as are ecological, cultural, psychological, and other factors (Roe, Chapter 2). Specifically, technological factors constrain, to some degree, the structure and content of the manufacturing decisions that an artisan makes when planning and producing an artifact. In turn, these decisions and their execution during artifact production determine the organizational relationships among all design attributes of the artifact, its style as an aspect of its design, the relative visibility of its attributes, and thus the behavioral or other meanings that the attributes of particular visibility levels can assume. As Sackett (1985) emphasizes, technology is the framework within which style manifests itself.

The technological perspective that is called for here and used in Chapter 7 to build a middle-range theory of artifact design goes beyond the approach that archaeologists commonly take when considering technology during analysis. Typically, technology is *controlled for* or *eliminated*. This is done by separately analyzing the styles of artifacts that are made of different raw materials. It is also done by discarding attributes that are thought to reflect technology alone and by focusing on attributes that are thought to be “stylistic.” In contrast, the tactic defined here and used in Chapter 7 is to *integrate* technological factors in the analysis of style and in mapping the relationship between form and process. This is achieved by explicitly considering and reconstructing the hierarchy of decisions that are involved in planning and producing an artifact.

This tactic requires that the archaeologist understand the nature of primitive technologies when analyzing the style of artifacts. Chapter 9 by Carr and Maslowski, on textiles, and Chapter 8 by Pryor and Carr, on basketry, illustrate this point.

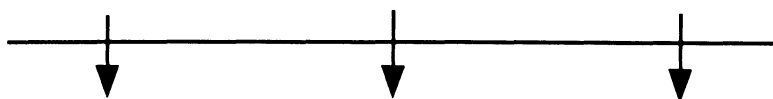
Distinguishing Process from Form, and the Systemic Domain from the Archaeological Domain. Integrating theory about style also requires the clear, conceptual separation of causal processes in the systemic domain from resultant forms that function or occur in either the systemic or archaeological domains (Figure 6-2; Schiffer 1976). This is necessary for the concept of style to be defined operationally, in terms of archaeological observables, alone. A definition of style that is both operational and does not confound form and process is required to circumvent logical tautologies when interpreting formal variation (see above).

In the theoretical framework introduced here, style is defined as a subset of design. It is most basically an empirical, material pattern in a population of artifacts. As an aspect of artifacts, it can exist in either the systemic or archaeological domains. In contrast, the processes and constraints that determine the design and style of artifacts all belong to the systemic domain, alone. To avoid logical tautology, they must not enter into the operational definition of design and style, in contradistinction to the definitions of style offered by Conkey (1978), Wiessner (1983), Sackett (1985), and others. Instead of linking form to process and the archaeological domain to the systemic through a processual definition of style, as these archaeologists have done, middle-range theory must be developed to *bridge* form to process and one domain to the other. Thus, the archaeologist faces not one ambiguous question, "What is style?" but two which pertain to different things. The first question is, "What aspects of the design of material culture constitute style?" This question concerns resultant form and is relevant to both the systemic and archaeological domains. The second question is, "What processes and constraints determine style?" It concerns the causes of form and is relevant to only the systemic domain (Figure 6-2).

Considering Style in Many Media. The final tactic that can be taken to build a middle-range theory that integrates the diverse archaeological approaches to style, is to study and compare styles in many media. As discussed above, form and process always interrelate within the framework of technological constraints and decisions. Thus, to find patterning in and to build theory about how behavioral and other processes map to form, it is helpful to search broadly for patterning in this relationship within many media and technologies. This tactic is used throughout Chapters 7 through 13.

Processes in the systemic context

What processes and constraints determine style?



Forms in the archaeological and systemic contexts

What aspects of the design of material culture constitute style?

Figure 6-2. A style and the processes and constraints that determine it are conceptually distinct and belong to different domains. Processes in the systemic context lead to forms in the archaeological and systemic contexts.

An Operational Translation of the Tactics and Illustration of Their Utility

The utility of the above tactics in thinking about material style, and in integrating current style theory, will become apparent as the unified middle-range theory is built in Chapter 7. For now, however, their conceptual usefulness can be illustrated by translating them into a more succinct, operational, mathematical perspective.

Figure 6-3 shows that the relationships between form and process generally, or between style and its determinants specifically, can be expressed as a mathematical function. The function links resultant forms in the systemic and archaeological domains to causal processes in the systemic domain, alone. Form and process are clearly distinguished conceptually. This provides an opportunity to define style

Form	Processes and constraints				
Systemic and archaeological domains	Systemic domain				
Total design of an artifact: morphology, color, texture, mass, etc.	= f (Processes and constraints in the systemic domain)				
	= f (Utilitarian functional constraints	+ Technological procedures	+ Raw material constraints	+ }	Techno-functional level of processes and constraints
	Active, conscious communication of social identity and messages	+ Active manipulation of the social order and justification of social strategies	+ Active, unconscious projection of archetypal figures through mythic representations	+ }	Society and community level of processes and constraints
	Active, unconscious projection of metaphoric information about the social and cosmological order, structural level	+ Passive, shared social group history of inter-actions and norms	+ Passive, casual learning and diffusion between groups	+ }	
	Active aspects of enculturation: student-teacher negotiations	+ Passive aspects of enculturation	+ }		Family and interacting artist level of processes and constraints
	Active, conscious communication of personal identity and messages	+ Active, unconscious expression of personal identity, preferences, creativity	+ Passive personal history of interactions	+ }	Personal and personal psychological level of processes and constraints
	Passive, personal habitual methods of manufacture	+ }			
	Active, unconscious projection of pan-human mythological themes about relationships	+ }			Depth-psychological level of processes and constraints
	Passive, personal motor skills	+ Passive, neurophysiological constraints on perceptions and visions	+ }		Personal and panhuman physiological levels of processes and constraints
	Random error in manufacturing			+ }	Error

Figure 6-3. The design of an artifact can be modeled as a mathematical function of various kinds of processes and constraints. See Chapter 1: Table 1-1, and Chapter 7: Table 7-2, for a more detailed listing of processes and constraints.

operationally and without tautology in terms of archaeologically observable, material patterns rather than processes, which are the objects of archaeological reconstruction.

Figure 6-3 also shows that the design of an artifact, which includes all of its traits, and its style, which is some subset of these, are a function of a broad array of potentially causal factors. The factors are both active and passive, conscious and unconscious. They range from technological and social factors to personal behavioral, personal psychological, depth-psychological, and personal and panhuman physiological ones.

If multiple regression were to be used to model the relationships in Figure 6-3, there would be one equation for each artifact design trait. Each equation would have the same predictor variables, on the right, but the variables would have different weighting coefficients. This would reflect the fact that different processes affect different traits to varying degrees. (See MacDonald [1990:54] for a similar model.)

Figure 6-4 illustrates some of the tactics and their utility graphically, from a linear programming perspective. The figure portrays the design variation of stone projectile points that comprise a population. The total design of a each projectile, as described by all of its N variables, can be represented by its position (a dot) in N -dimensional space. Only length and width are shown here. The processes and constraints that determine the range of designs taken by the projectiles are represented by lines A, B, C, and D. These bound the feasible length and width combinations of the projectiles. Thus, causal processes or constraints (the lines) and resultant forms (the dots) are again clearly distinguished conceptually.

Figure 6-4 also shows that technology is the framework within which style manifests itself. In this

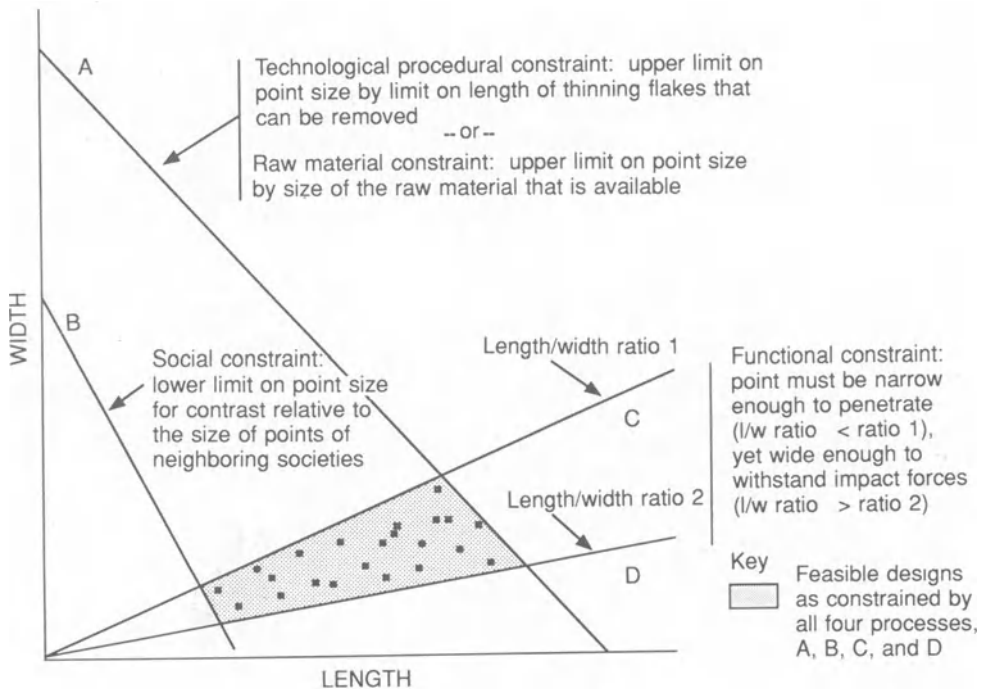


Figure 6-4. Variation in the design (length and width) of a population of projectile points (dots within the shaded area) is limited by four processes or constraints: A, B, C, and D. See text for explanation.

example, the material stylistic correlates of a social process are embedded within technological and functional processes and constraints. The whole area of the plot to the right of and above the line B represents the feasible designs (sizes) of projectiles in regard to the social process, boundary maintenance between neighboring societies, alone. However, only a portion of this area, the stippled area, has been realized materially. The stippled area represents the range of designs that are possible technologically (to the left and below line/process A) and functionally (between lines/processes C and D) as well as socially (to the right and above line/process B). Thus, style is embedded within and manifested through technology and function. Technological factors must be considered in the analysis of style and in the search for regularities between form and process.

If the illustrated model were extended to include all N of the design attributes of the projectiles and all causal processes and constraints, a complex mesh of processes and constraints would define the final limits of the feasible design of the projectiles. Multiple processes or constraints would determine some individual attributes, and some individual processes or constraints would determine multiple attributes (see also Neitzel, Chapter 12; Morris, Chapter 13). For example, in Figure 6-4, the range of projectile widths might be limited not only by functional, technological, and social boundary maintenance processes, but also by other social, social-psychological, personal, and physiological factors listed in Figure 6-3. Thus, it is important to consider a wide range of attributes and causal factors when studying the mapping of process to form and when building middle-range style theory. The total design of an artifact, not simply attributes thought to be "stylistic," must be analyzed.

Not illustrated in Figures 6-3 or 6-4 is the hierarchical organization of design attributes and their determinants. Multiple regression and linear programming instead assume the simultaneous, paradigmatic organization of dependent variables (here, causal processes) and independent variables (here, resultant forms). Other analytical methods, described in Chapter 7, are necessary to capture the hierarchical nature of artifact design.

In sum, the tactics discussed above for integrating current schools of thought about style and for building middle-range theory are useful. They provide broader and clearer perspectives from which the relationships between form and process can be conceptualized, studied, and modeled.

A DEFINITION OF MATERIAL STYLE

An operationally useful definition for material style follows naturally from the above perspectives on material culture and tactics for integrating style theory. Nine points are pertinent, as follow.

1. Material style is a material pattern. It can be defined, much as it is in traditional art history, by objective material and contextual criteria. A style is characterized by the restricted range of its forms, relationships among forms, part-whole relationships, and/or Gestalt-perceptive qualities, and, to some extent, by its coherence in time-space and in its contextual distribution.

The material characteristics of a style can result from or allow various processes. For example, a style's forms or relationships among forms may result from natural or cultural selective processes at an ecosystem scale. Or the relational and Gestalt-perceptual features of a material style may provide a basis for ambiguity, interpretation, and evaluation in the social use of an artifact (Hodder 1990:46). However, these processes should not be confused with the material features of a style that are the product of or that permit the processes. Form is not process. A material style is not its functions, roles, or causes. Thus, the material and contextual approach favored here for defining style differs from the processual manner in which Wiessner (1983) has defined the emblematic and assertive artifact styles and Wilmsen (1974), Conkey (1977), Sackett (1985), and Hodder (1990) have defined style in general.

2. A material style, like the artifacts that manifest it, can be a component of either the archaeological or systemic domains. In contrast, the functions, roles, and causes of a style pertain to the systemic domain, alone. These two domains and their constituents must be kept conceptually distinct if logical tautologies are to be avoided when interpreting the design of artifacts.

3. A material style pertains to a whole population of artifacts, not to a single artifact. It is a pattern that the artifacts of a population share to some degree. A single artifact may be *of* a style or *manifest* a style, but does not constitute a style.

The contrast between the material style of a population of artifacts and its particular manifestation in an individual artifact is important. It can reflect, among other things, the dialectical way in which material styles are used to link individual persons, events, or contexts to general cultural principles (Hodder 1990:46–48). However, these dynamic processes should be kept conceptually distinct from their expression in the material contrast between a population and an individual specimen. Hodder does not maintain this clarity.

4. The aspects of a material style that a single artifact manifests is a subset of its total design. Analogously, the material style of a population of artifacts is a subset of their total design variation.

5. The design of an individual artifact may encompass expressions of many styles, each of which is the product of different causal factors and is manifested in different kinds or levels of formal attributes. For example, an artifact might include expressions of styles that have personal, social, and regional cultural causes, which are manifested respectively in obscure, moderately visible, and highly visible sets of attributes.

The multiple styles that an artifact may express are not to be defined, however, by their processual causes. This would invite tautology. Instead, they are to be defined by the formal, spatial, temporal, and/or contextual patterning of the attributes that comprise them.

The view that an artifact has multiple styles differs from the Gestalt, holistic view of an artifact and its “style,” which is assumed implicitly in some intuitive, culture-historical typologies (Sackett 1982:65–67).

6. The multiple styles that an artifact expresses may pertain to units of any of a variety of scales, from an ecosystem to social networks of varying sizes to an individual. In turn, these styles may be the product of or permit any of the great variety of processes that may operate at these scales (Chapter 1: Table 1-1; Chapter 7: Tables 7-2, 7-3).

This multiscale view of style is approached in traditional American archaeology and anthropology by the spatial–formal distinctions made between sites, regions, subareas, areas, and horizons or Great Art Styles (Willey and Phillips 1958:18–34); between regional traditions and interaction spheres (Caldwell 1964; Struever 1965); between Little and Great Traditions (Redfield 1955); and between subcultures (or subareas), cultures (or tribes), and culture areas (Kroeber 1923:335–343, especially Figure 35; 1939; 1957). In contrast to the multiscale viewpoint is the perspective of Old World, “standard archaeological systematics,” as defined by Sackett (1982:65). In the standard perspective, a style is thought to pertain to only one kind of unit—a society—and to derive from only one kind of determining process—enculturation.

7. The attributes that comprise the design of an artifact are arranged hierarchically. Their hierarchical organization can be defined by three objective criteria. These are the relative visibility of the attributes, their relative placement in a hierarchy of manufacturing decisions, and their relative position in a sequence of production steps (see Carr, Chapter 7). This view differs from Sackett’s (1982, 1985) nonhierarchical, partitive, isochrestic perspective and from Jernigan’s (1986) more particular, nonhierarchical, configuration approach to ceramic decoration.

Each style that an artifact expresses is composed of attributes that can range either widely or more narrowly in their relative hierarchical positions. The styles that an artifact expresses need not themselves be arranged in a hierarchical, nonoverlapping manner.

8. Following Sackett’s (1982) technological perspective, a material style is comprised of attributes that can take multiple states, which are viable, functionally equivalent, potential manufacturing options. A design attribute that is technologically restricted to one feasible state is not stylistic. An example would be the attribute, raw material type, in a landscape where only one kind of material is available for use.

The attribute states that comprise a set of viable, functionally equivalent, potential manufacturing

options are called by Sackett (1985:187) “isochrestic variation.” In both Sackett’s view and the art-historical one presented here, not all extant isochrestic variation is stylistic. Only that variation which is also characterized by its restricted formal, spatial–temporal, and/or contextual patterning is considered stylistic (see Figure 6-1).

Three qualifications of Sackett’s perspective are necessary. The first pertains to the equivalency of the alternative states that stylistic attributes can take. The alternative states of a stylistic attribute are analogous in their utilitarian functional roles and are “viable.” However, they need not have the same “selective advantage” with respect to a given milieu. Differences in the selective advantages of attribute states, or in changes in milieu that affect their selective advantages, are two basic causes of stylistic change (Hill 1985; Braun, Chapter 5).

The second qualification concerns the role of choice in causing style. Sackett (1985:157) equates the potential, technologically feasible manufacturing options that characterize a stylistic attribute with choices. Style is thought to emerge from choice (Deetz 1965:46); however, this need not be so. A society may have knowledge of only one of several potential, technologically feasible options for manufacturing a given kind of artifact and may consistently produce that kind of artifact in that one way. The resulting material pattern is stylistic, in that it comprises one option of several technologically feasible options and is restricted in space–time. However, the patterning results not from artisan choice, but from a restricted pool of knowledge, for whatever culture-historical reasons, and from the shared culture history of the artisans.

The third qualification of Sackett’s view of style concerns the role of enculturation in causing style. Sackett characterizes style as spatial-temporally patterned isochrestic variation that is “dictated largely by craft traditions within which the artisans have been enculturated” (Sackett 1985:187). This definition of style is too restrictive. Enculturation is only one of a great diversity of factors that can lead to patterned material forms (Carr, Chapter 7: Tables 7-2, 7-3). Moreover, definitions of style should not be tied to any causal processes but, instead, should be drawn in terms of formal, spatial, temporal, and contextual patterning, alone.

9. No clear distinction can always be drawn between attributes that comprise a style and attributes that reflect utilitarian function. Three reasons are clear. These are logical, quantitative analytic, and culture-historical in nature.

First, from a logical standpoint, the criteria for defining stylistic and utilitarian functional traits fully crosscut each other. The criterion of formal, spatial–temporal, and/or contextual patterning that defines an attribute as stylistic does not include or exclude logically whether the trait is essential to the artifact’s utilitarian function. Thus, a design trait can be stylistic alone, functional alone, stylistic and functional, or neither, from a strictly logical standpoint.

Second, from a quantitative analytic perspective, a single design variable can simultaneously be the product of multiple kinds of factors, including utilitarian functional constraints and social or other behavioral processes that produce stylistic patterning. This is easily argued from Figure 6-4. The range of lengths and widths that define the design and style (stippled area) of the population of projectiles simultaneously reflects technological, social, and utilitarian functional constraints. Binford and Binford (1966) recognized this potential for multiple causation of formal variation at a different level of organization of material culture when they proposed the use of factor analysis to explore assemblage functional and “stylistic” diversity.

The third reason that it is futile to always try to distinguish stylistic from utilitarian functional attributes is culture–historical. When the alternative states of a design attribute are analogous but vary in their utilitarian functional roles, the attribute is functional by definition. In turn, such functional, formal variates may be distributed unevenly over space, correlating with natural environmental differences and differences in human activities and artifact use. However, these functional, spatially patterned variations in artifact design may also, through time, become a basis for social groups actively identifying or distinguishing themselves (see Chapter 7: Figure 7-12). Thus, functional, formal

variations can come to participate in social processes and take on a role that is normally considered "stylistic." Whether the attribute is called functional or stylistic or both is a moot point.

Adovasio and Gunn (1977) illustrate this circumstance for Great Basin and California winnowing baskets. The baskets of different social groups in different ecological settings were constructed differently in order to winnow different kinds of seeds, constituting functional differences in basket design. However, these functional differences also came to be imbued with social meaning and were used by groups to distinguish themselves ethnically.

These arguments do not deny the possibility of sometimes being able to distinguish embellishments, decorations, or "adjunct forms" (Sackett's 1982:71), which are stylistic if they exhibit the requisite formal, spatial-temporal, and/or contextual patterning, from nondecorative attributes which may be functional. However, even this contrast can be misleading if the "nondecorative," "functional" traits also exhibit formal, spatial-temporal, and/or contextual patterning and are involved in processes of social identification.

Note that throughout this discussion, care has been taken to use the term, "function," to refer to the utilitarian function of an attribute, or what Binford (1965:200) calls its "primary function." The term has not been used to refer to the broader "systemic" function of an attribute (Binford 1965:199–203; 1986).

In sum, *a material style is that subset of the total design variation of a population of artifacts which is comprised of isochrestic variates of material attributes that are hierarchically organized and that are restricted in their forms, relationships among forms, part-whole relationships, Gestalt-perceptual qualities, and, to some extent, their distribution in time-space and among contexts.*

The concept of a style is still productive for archaeologists to use. However, to have logical integrity and to be useful analytically, it must be defined in material and contextual terms and clearly separated from the processes that determine a style. It is also important to distinguish between the increasingly restrictive terms of "design," "formal variation," "isochrestic variation," and "style." Finally, an artifact need not be of one style; it may reflect several simultaneously in its different attributes. The unified middle-range theory, which is built in Chapter 7, is based on each of these premises.

CONCLUSION

The overall pattern of growth of archaeological thought on style since the mid-1960s is marked by repeated splintering into competitive schools, with narrowing definitions of style and increasingly restricted ranges of processes of interest. The current result of this intellectual history is an uncertainty about how to assign and support the assignment of processual meaning to formal variation. This uncertainty has sometimes been expressed both as a hopelessness (Wiessner 1983:273; Sackett 1986:631) or a renewal of historical particularism (Hodder 1982c:11–13).

This chapter does not challenge any particular school of thought on style. Rather, it calls for their integration through systematic, cross-cultural study of diverse media, determinant processes, and ranges of formal attributes in a search for regularities in form-process relationships. The development of middle-range theory, comprised of explicit bridging arguments that link form and process yet show sensitivity to the possible effects of local context, is seen as the most fruitful ground for integration at this time. This contrasts with some recent intellectual debates, which have focused on elaborating higher-level theory about the cultural processes that determine style.

Essential perspectives for developing middle-range theory about style include the hierarchical and technological nature of style emphasized here, as well as the concept of artifact "design." These perspectives invite the consideration of and provide a framework for integrating a wide range of processes and aspects of form. The actual construction of a unified, middle-range theory is undertaken in the next chapter of this book.

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Chapter 7

A Unified Middle-Range Theory of Artifact Design

CHRISTOPHER CARR

In this chapter, a middle-range theory is built that links specific aspects of the form of material culture to specific factors that can determine form. The tactics presented in Chapter 6 for building such a middle-range theory are used. The general nature of material style defined there, including its hierarchical and technological aspects, serves as a guiding perspective for building the theory.

The theory maps a hierarchy of formal attributes to a hierarchy of behavioral and other processes and constraints in a partially determinant, partially indeterminant, and context-dependent manner. The hierarchy of formal attributes is defined by largely objective criteria, including the relative visibility of the attributes, their relative placement in a hierarchy of manufacturing decisions, and their relative position in a sequence of production steps. The processes and constraints that are considered include technological (procedural and material), sociocultural, social-psychological, personal psychological, depth-psychological, and physiological-level factors, which pertain to varying spatial scales. A more expansive conceptual framework for future theory building is outlined in Chapter 1 (Figure 1-1, Table 1-1) and Chapter 14.

The theory built here is primarily middle-range in scope (Binford 1977), in that it aims at “identifying” the formal attributes of an artifact by assigning to each a single or several potential etic meanings. The assigned meanings are general kinds of processes or constraints (e.g., messaging social affiliation, the limitations posed by raw material properties) that may determine the state taken by an attribute. The theory considers but does not focus on the dynamics of the ultimate factors that determine stylistic content, diversity, and change, such as natural and cultural selection, social-psychological motivation and decision making, cognitive-perceptual organization, or the workings of the unconscious. Most of these factors are reviewed in Part II of this book. The theory pertains to all media. It is context-free in a culture-historical sense, but emphasizes the essential role that contextual information must play in deriving interpretations.

Most of the ideas discussed here are not new and are attributable to earlier outstanding theoretical contributions that have been made by many archaeologists and ethnoarchaeologists. What is new is the organization and integration of their ideas into a unified framework in a complementary

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rather than competitive manner, and in a hierarchical arrangement rather than on an equal basis. Different ideas about style pertain to differing ranges of levels of artifact form. By contrasting and placing bounds of applicability on the various ideas, they are both clarified and made operational.

The unified theory presented here was built on the theoretical developments of Whallon (1968), Hardin (Friedrich 1970), Wilmsen (1973), Wobst (1977), Hill and Gunn (1977), Braun (1977, 1980), S. Plog (1978, 1980), Conkey (1978, 1980), Voss (1980), Braun and Plog (1982), Sackett (1982, 1985), and Wiessner (1983, 1985). Their developments were then qualified and integrated into a first approximation of a unified theory by my inductively reconsidering Wiessner's (1983) Kalahari San data and Voss's (1982) European Neolithic ceramic data. Also important in building the theory were my reflections on my own creative experiences and enculturation as a watercolorist and pastel artist over many years, and my less extensive training in oils, potting, weaving, batique, and metalwork. Voss's (1980) paper on unifying style theory was especially critical to framing this inductive phase of theory building. The theory was then tested and refined through a series of studies of data on prehistoric Ohio Hopewell textiles (Carr and Maslowski, Chapter 9), California basketry (Pryor and Carr, Chapter 8), and carved, wooden Iroquois masks (Carr and Rosenthal 1986; Rosenthal, Chapter 10). These studies are presented in subsequent chapters, in order to illustrate the theory.

The significance of the unified theory of design is that it allows stylistic studies to be made analytically more "concordant" (Carr 1985). Specifically, it helps the researcher to choose an initial set of formal variables that are most likely to be relevant to and useful in measuring one or a few behavioral or other processes or constraints that are of interest. This is critical to breaking what has been called the "methodological double bind" (Carr 1985:3, 24–25) at the beginning of analysis, when little may be known empirically about the processes and constraints that determine formal variation. A clear application of how the unified theory can be used to choose relevant variables is given in the stylistic analysis of Ohio Hopewell fabrics reported in Chapter 9. In this case, only some of a broad set of fabric attributes were deduced to be useful for reconstructing regional patterns of social alliance.

This chapter has seven major parts. First, the skeletal structure of the unified theory is overviewed. This structure includes five "hierarchies," which pertain to: (1) processes/constraints that can determine the formal states taken by the attributes of an artifact, (2) the relative visibility of attributes, (3) manufacturing decisions, (4) production steps, and (5) the geographic distribution of the alternative states taken by attributes. The next five sections are devoted to describing each of the five hierarchies and the interrelationships among them. The interrelationships constitute the bridging arguments of the theory. Finally, some analytical strategies for applying the theory are outlined.

AN OVERVIEW OF THE STRUCTURE OF THE UNIFIED THEORY OF ARTIFACT DESIGN

The theory built in this and subsequent sections of this chapter draws upon a rich literature of ideas and terms of many researchers of material style (see citations above). Many of these ideas and terms have had to be qualified and modified here in the process of melding them into a unified framework. Consequently, for clarity, ideas and terms of other researchers are referenced here only when original meanings pertain.

In order to empirically support and illustrate the particular mappings drawn here between form and process, some stylistic data of certain researchers are reinterpreted within the broader framework. These supportive data, as well as nuances of the theory, are presented in the footnotes of the chapter, or in subsequent chapters of this book (Pryor and Carr, Chapter 8; Carr and Maslowski, Chapter 9; Rosenthal, Chapter 10).

Table 7-1 outlines the skeletal structure of the unified theory. Throughout this table and this chapter, the term "attribute" is used in the most general way to refer to either the content or structure of an artifact: its forms, engineering, and other properties (e.g., cord twist tightness, color),

relationships among forms or properties, part-whole relationships, syntactic patterns, and Gestalt-perceptual qualities (e.g., visual texture). This contrasts with the tendency in archaeology to use the term “attribute” to describe content (e.g., motifs, elements) rather than structural relationships. Also, attributes are distinguished here from the various “states” that they may take.

Finally, the concept of the attribute is not used here to refer to the inferred, general rules of organization of the properties of an artifact, as is sometimes the case in grammatical approaches to style and to measuring social interaction (e.g., Roe 1980; Chippendale 1986). The term is restricted to material or empirical properties and relationships.

Table 7-1 shows that, in contrast to the views of Wiessner, Sackett, Hodder, and some others, the design attributes of an artifact need not be conceived of as equal in their characteristics and in their potential for expressing various kinds of processes or constraints. Rather, an artifact’s attributes can be thought of as being arranged *hierarchically* according to certain fundamental characteristics or “dimensions” of their variation. These dimensions are: (1) the visibility of the attributes relative to each other; (2) the relative order of the attributes in a hierarchy of manufacturing decisions involved in planning the design and attributes of the artifact; and (3) the relative order of the attributes in a sequence of production steps involved in manufacturing the artifact and manifesting its attributes. Formally, attributes ordered along each of these three dimensions (e.g., highly visible versus obscure attributes, attributes decided upon first versus last) are structured hierarchically. For example, obscure attributes usually occur within, or comprise a part of, highly visible ones.

The three dimensions of attribute visibility, decision order, and production order largely parallel, or covary positively or negatively, with each other. For example, highly visible attributes tend to be those produced either early or late during the manufacture of an artifact, depending on the medium. Because the three hierarchical dimensions covary, they can be used in conjunction with each other to define the hierarchical arrangement of an artifact’s attributes. Thus, in Table 7-1, the artifact attributes shown in column 1 are ordered into a hierarchy from 1 to last according to the three hierarchies of dimensions in columns 2, 3, and 4.

Completely independent of these hierarchies of artifact attributes and their characteristics, it is also possible to define a hierarchy of processes and constraints that determine an artifact’s design. These are summarized in column 7 of Table 7-1, and listed in greater detail in Table 7-2. They range from processes and constraints that are solely technological, to those that pertain to a society or community and its social segments of various decreasing scales, to those that operate at finer scales. Finer scale processes include those at the levels of the family or other interacting artisans, personal behavior, personal psychology, personal physiology, panhuman depth psychology, and panhuman physiology. The processes and constraints also range from active to passive and conscious to unconscious. Table 7-3 lists some contextual conditions that determine whether the various processes or constraints occur, their intensity, and their form.

The hierarchy of processes and constraints that determine an artifact’s attributes and design somewhat parallels and can be linked to the hierarchy of attributes that is defined independently by their relative visibility, decision order, and production order. Consequently, a range of potential, causal processes and constraints, that is, etic meaning(s), can be mapped to each attribute. The nature of an attribute is thus “identified.” This linkage of processes to forms is achieved with a large number of middle-range theoretic bridging propositions. These are schematized in column 6 of Table 7-1 and are discussed and justified in detail, below. For example, we find that first-order attributes—attributes that are highly visible, first-order in the hierarchy of manufacturing decisions, and early or late in the production sequence—may be determined by factors that are technological, active or passive social, active personal, or utilitarian functional in nature.

Of the three hierarchies that are used to order an artifact’s attributes in order to assign ranges of etic meanings to them, the visibility hierarchy is most useful (see pp. 219–220, 223–224, 247; Voss and Young, Chapter 3; Pryor and Carr, Chapter 8).

The etic meanings that can be discriminated when assigning them to attributes on the basis of

Last-order attributes, $n_2 \rightarrow n_{last}$	Poorly visible	Last-order manufacturing decisions	Late or early production steps	Restricted geographic distribution, defining a style "cline"	Last-order attributes:	Attributes reflecting finer-scale processes:
					Social, passive processes	Attributes reflecting family or interacting artisan level processes, active or passive
					Interacting artisan level active or passive processes	Attributes reflecting personal and personal-psychological level processes, active or passive
					Personal and psychological processes, active or passive	Attributes reflecting personal physiological level constraints, passive
					Personal physiological processes, passive, unconscious	Attributes reflecting depth-psychological level processes, active and unconscious
					Depth-psychological processes, active, unconscious	Attributes reflecting parhuman, physiological level constraints, passive
					Utilitarian function	

^aAttributes reflecting artifact utilitarian function crosscut those that reflect the technological, social, interacting artisan, and personal levels. Nonvarying, technologically or materially constrained attributes are not considered.

Table 7-2. Processes and Constraints beyond Utilitarian Function that Determine an Artifact's Design and Their Correlates in Attribute Visibility and Geographic Distribution

Processes and constraints ^a	Attribute absolute contextual visibility	Geographic distribution ^b
<i>Technological processes and constraints</i>		(Research universe = several societies)
Passive constraints posed by basic method of manufacture	Visible	Distribution of the medium
Passive raw material properties	Visible	Distribution of the medium
<i>Society, community, social segment level of processes</i>		(Research universe = several societies)
Expression of social identity:		
Active, conscious expression or communication of boundaries between groups in order to message differentiation, complementarity, rejection, competition, and/or interruption between the groups (Wobst 1977, Wiessner 1984)	Visible	Patchy-bounded
Active, conscious communication of boundaries between groups as part of the competitive strategies of the subgroups within them (Barth 1969; Hodder 1982)	Visible	Patchy-bounded
Active, conscious expression or communication of intragroup cooperation and/or group membership (Wiessner 1983)	Visible	Patchy-bounded or uniform-unbounded
Active, conscious negotiation of social status between groups: reinforcement and resistance (Braithwaite 1982; Hodder 1984)	Visible	Patchy-bounded or random; depends on community settlement pattern
Active, conscious negotiation of social status within groups: reinforcement (Wobst 1977) and resistance (Hodder 1982a)	Visible	Random
Active interaction: active, conscious, stylistic mimicry in order for one group to integrate with another, as during migration or acculturation (Pryor and Carr, Chapter 8; Rosenthal, Chapter 10)	Visible	Uniform-unbounded
Active, conscious communication of other pansociety or pangroup messages:		
Economic or political imperatives	Visible	Patchy-bounded
Ownership	Visible	Patchy-bounded
Social authorship (e.g., made in Japan)	Visible	Patchy-bounded
Regulations of prescription or proscription (e.g., stay off this land)	Visible	Patchy-bounded
Confrontation	Visible	Patchy-bounded
Coercion, domination	Visible	Patchy-bounded or uniform-unbounded
World view, mythological, religious themes or personifications or metaphoric information about the organization of society and the cosmos through representational art or nonrepresentational symbols (Roe, Chapter 2; Rosenthal, Chapter 10)	Visible	

Active, unconscious projection of metaphoric information about the social order and cosmology at the structural level (Roe, Chapter 2)	Obscure	Patchy-bound or uniform-unbounded
Active, unconscious projection of depth-psychological, archetypal figures through pansocietal representations of mythic-religious personages: anima, animus, hero, wise old man, wise old woman, miraculous child, shadow (Rosenthal, Chapter 10)	Visible	Patchy-bound or uniform-unbounded
Active interaction: intermarriage, adoption, or artifact exchange between groups, or joint participation in intimate rituals or other events, leading to the diffusion of design attributes.	Visible to obscure	Patchy-bound, uniform-unbounded, or clinal
Passive interaction: less structured contacts between members of two groups, leading to casual learning and diffusion of design attributes (Pryor and Carr, Chapter 8)	Visible to obscure but often obscure	Clinal
Passive sharing of a history of interactions with others by a social group, which constrain the range of techniques of manufacture and/or content. "Historicity" (Braun, Chapter 5) leading to restricted ranges of "isochrestic options."	Visible to obscure but often obscure	Patchy-bound, uniform-unbounded, or clinal
<i>Finer-scale factors:</i>		
<i>Family artisan and interacting artisans level of processes</i>		
Active, multiperson system of creative inspirations (e.g., Lowman and Allan 1973:22; Roe 1979:200)	Visible to obscure	(Research universe = one society) Clinal
Active component of enculturation: teacher-student negotiations, joint participation in craft schools	Visible to obscure	Clinal
Passive component of enculturation (Longacre 1964)	Visible to obscure but often obscure	Clinal
Passive interaction: less structured contacts between artisans, leading to casual learning and diffusion of design attributes (Pryor and Carr, Chapter 8)	Visible to obscure but often obscure	Clinal
Passive sharing of a history of interactions with others by a family (Pryor and Carr, Chapter 8)	Visible to obscure	Clinal
<i>Personal behavioral and personal psychological level of processes</i>		
Expression of personal identity:		(Research universe = one society)
Active expression or communication of individual artisan's states of being (e.g., emotional state, liminality, alienation, or integration)	Visible to obscure	Random
Individual artisan's active, conscious or unconscious preferences (can be part of the active component of enculturation: teacher-student negotiations (Pryor and Carr, Chapter 8))	Visible to obscure	Random
Individual artisan's active, conscious or unconscious creative inspirations (can be part of the enculturation process, teacher-student negotiations)	Visible to obscure	Random
Individual artisan's active, unconscious selective memory (Rosenthal, Chapter 10)	Visible to obscure	Random

(continued)

Table 7-2. (Continued)

Processes and constraints ^a	Attribute absolute contextual visibility	Geographic distribution ^b
Active, conscious communication of other personal messages:		
Ownership		
Authorship (e.g., artisan's mark)	Visible to obscure	Random
Regulations of prescription or proscription (e.g., stay off this property; no smoking near me)	Visible to obscure	Random
Passive, personal history of interactions, and influences through diffusion, that constrain one's range of known techniques of manufacture and/or content; "historicity" (Pryor and Carr, Chapter 8)	Visible	Random
Passive, idiosyncratic, habitual methods of manufacture	Visible to obscure	Random
<i>Personal physiological constraints</i>		
Obscure	Obscure	Random
Passive motor skills (e.g., handedness) (Hill and Gumm 1977)		(Research universe = one society)
<i>Panhuman, depth-psychological level of processes at the core of the person's psyche/self (Jung 1964)</i>	Obscure	Random
		(Research universe = several societies)
Active, unconscious projection of archetypal personifications (e.g., the Hero, Wise Old Man, Numinous) through society-specific, mythic-religious personifications)	Visible	Patchy-bound
Active, unconscious projection of panhuman archetypal, themes about relationships (e.g., gender relations, family relations, dominant-subordinate relations, the oneness/individual dichotomy, relationships about healing, etc.)	Obscure	Patchy-bound or uniform-unbounded
<i>Panhuman physiological constraints</i>		
		(Research universe = several societies)
Passive neuropsychological constraints on perceptions and visions (e.g., phosphene-induced shapes; Reichel-Dolmatoff 1987)	Visible to obscure	Uniform-unbounded

^aThe processes and constraints listed here are a subset of the process and constraints cited by Carr and Neitzel (Chapter 1, Table 1-1, columns 3 and 4, respectively). Factors at the technological level defined here can be envisioned as a subset of ecological-level factors that Carr and Neitzel define.

^bA distribution is clinal when an attribute state follows a smooth distance-decay model of some form away from the center of the social unit of interest. The decay may terminate either within or beyond the unit's boundary. A distribution is uniform-unbounded when an attribute state occurs uniformly over several units of interest. A distribution is patchy-bound when an attribute state is more or less uniform within a social unit, differs between units, and exhibits a threshold/boundary between units. A distribution is random when the states of an attribute occur randomly within the unit of interest. Units may be societies, communities, or smaller groups, depending on the process. They must be territorial or residence groups for the listed geographic distribution to pertain.

It is assumed here that the design attribute can take a large number of states so that a clinal distribution can freely take this form as opposed to being constrained into a patchy-bound or uniform-unbounded distribution (see pp. 240-241).

the attributes' visibility, manufacturing decision order, and production order, alone, are broad. They fall into a few classes: (1) a set of technological processes and constraints; (2) several classes of social factors of several scales that can perhaps be distinguished; and (3) an amalgam of finer-scale factors at the levels of the family and interacting artisans, personal behavior, personal psychology, personal physiology, depth psychology, panhuman physiology. Determining the more particular causes of attributes requires a consideration of the geographic and contextual patterning of attributes.

Specifically, it is possible to define a fourth, hierarchically structured dimension of attributes (Table 7-1: column 5), which describes the geographic expanses of the distributions of their alternative states. This hierarchy parallels the visibility, manufacturing decision, and production step hierarchies under certain natural environmental and social organizational conditions. Among these conditions are the uniformity of raw materials over the research universe and the lack of artifact exchange. When those conditions hold, the factors that potentially determine an attribute can be inferred from the geographic areas over which the attribute's states are distributed, both absolutely and relative to each other, and the areas of the states of other attributes. This is so because different kinds of factors operate at different spatial and sociocultural scales. In addition to the spatial expanses of an attribute's states, information on the forms of their distributions and a wide array of contextual considerations can be used to refine the etic meanings assigned to an attribute.

Note that utilitarian functional constraints on design are not considered explicitly within the framework presented here. This is done, in part, because functional constraints, as a category, manifest in attributes of many levels of an artifact's design. Attributes that are strictly functional cannot be predicted on the basis of their visibility, manufacturing decision order, or production step. Moreover, functional constraints sometimes crosscut the technological, social, or other factors that may determine an artifact's design (Carr, Chapter 6:Figure 6-4), making it impossible to discriminate attributes that reflect only one of these.¹

The framework presented in Table 7-1 is formally a middle-range theory. Middle-range theory allows what Binford (1977) calls the "identification" of a phenomenon—the logic whereby a phenomenon is assigned etic meaning on the basis of objective criteria. Here, design attributes are the phenomena to be identified; their causal factors are the etic meanings to be assigned; and the objective mapping criteria are an attribute's relative visibility, decision order, and production step. The act of linking form to causal factors on the basis of these criteria is the logical process of identification (Figure 7-1). The bridging propositions presented below that use these criteria to link form to cause are what Binford calls "identifying propositions" or "definitions."

The idea of conceiving of an artifact's design as a hierarchy of attributes that reflect different processes and constraints has much precedence in archaeology. Different researchers have used attribute visibility, attribute position in the production sequence, or attribute position in the decision hierarchy singularly to define attribute hierarchies, and not all researchers have recognized that attributes of different levels correlate with different processes.² In contrast, some ethnological statements

¹McGuire and Schiffer (1983) provide a broad theory of artifact design that considers both functional and social factors within a decision-making framework. Their theory can perhaps be integrated with the framework presented here (see pp. 229–230).

²The concept of an artifact's design being a hierarchy of attributes is embedded in the type–variety concept of traditional archaeological classification (Gifford 1960). The idea was stated more explicitly by Whallon (1968), was first operationalized and documented well by Hardin (Friedrich 1970), and was subsequently refined by Redman (1977:Fig. 4.2). Different researchers have used different criteria for defining attribute hierarchies. Gifford (1960) implicitly used attribute visibility. Hardin (Friedrich 1970:333, Hardin 1979:92, 1983a:315) generally used attribute position in the production sequence (see Footnote 27, p. 230). Redman (1977:46), Plog (1978:161, 1980:41–42), Braun (1977:129), and Braun and Plog (1982:511) used attribute position in the decision hierarchy. Many other archaeologists have understood the hierarchical organization of decoration or the total design of an artifact (see Graves' [1982:306] review), but have not seen that attributes of different levels reflect different processes.

Table 7-3. Contextual Conditions that Determine the Occurrence, Intensity, and/or Form of the Processes/Constraints that Determine an Artifact's Design^a

Technological factors

Curation or expediency stressed by the technology
 Material, time, and labor costs set by the technology
 Artifact's anticipated use-life

Ecological and regional–historical factors

Environmental structure and grain, which affects the distribution of societies, degree of contact between societies, access to raw materials, relative prestige (Roe, Chapter 2)
 Environmental content, which affects the abundance of raw materials
 Regional historicity: the extant pool of isochrestic design alternatives upon which selection can act (Braun, Chapter 5)

Social, community-level factors

Social factors affecting between-society diffusion: grammatical, symbolic, and semantic similarity of styles of different societies; ethnotaxonomy of their styles (Roe, Chapter 2)
 Sociocultural factors affecting the degree of contact, cooperation, and competition between societies
 Pansociety population density and its effect on daily interaction rates, audience sizes, and artifact viewing distances
 Socially determined priorities of various messages, situation-dependent or independent, active or passive
 The social situation, its nature, group composition, and their effects on message priorities
 The social situation, group size, and their effects on interaction and artifact viewing distances
 Socially determined weighting of media for their communication potential ("semantic weighting," Roe, Chapter 2), active or passive
 Society-wide concepts of the self (Carrithers, Collins, and Lukes 1985)
 Socially determined concepts of property and ownership, active or passive
 Constrained social access to raw materials, active
 Social factors that affect the costs of artifact production and value, active and passive
 Social historicity: the extant pool of isochrestic design alternatives upon which selection can act (Braun, Chapter 5)

Finer-scale factors

Family artisan and interacting artisans' level

Factors that affect enculturation (Roe, Chapter 2; Pryor and Carr, Chapter 8):

Active power relations between teacher and student
 Kin relations, generations, and genders among which teaching occurs
 How creativity is accepted and criticism presented
 Realms of protected deviation
 Curation and archiving of models
 Active or passive preservation processes that affect the continuity of enculturation
 Artisan mobility

Factors that affect casual learning and diffusion:

Grammatical, symbolic, and semantic similarity of the styles of groups; artisan mobility; frequency of contact
 Family historicity: the extant pool of isochrestic design alternatives upon which selection can act (Braun, Chapter 5)

Personal behavioral and personal psychological levels

Personal technological knowledge
 Personal historicity: the extant pool of isochrestic design alternatives from which choices can be made
 Personal message priorities
 Personal preferences, goals, strategies
 Personal beliefs, world views
 Ego drives
 Contents of the personal layer of the unconscious: subliminal information, repressed thoughts and inspirations, personal manifestations of the archetypes

Personal physiological level

Personal physiology affecting motor coordination

(continued)

Table 7-3. (Continued)

<i>A Panhuman, depth-psychological level</i>
Contents of the cultural and universal, collective layers of the unconscious: mythological themes and structures about the social order and cosmology; culture-specific manifestations of the archetypes; the archetypes
<i>Panhuman physiological level</i>
Neurophysiology and biochemistry affecting nature and content of altered states of consciousness
Active memory capacity and information processing capability

^aThe contextual conditions listed here are equivalent to the “conditions” and “adaptive milieux” cited by Carr and Neitzel (Chapter 1: Table 1-1, column 4).

on the nature of style (Kroeber 1963; Barth 1969), and recent archaeological studies of style (Sackett 1982; Hodder 1982a; Wiessner 1983), have treated attributes as formally equivalent, nonhierarchical in organization, and without different predispositions for reflecting various processes and constraints.

It should be stressed that the framework presented in Table 7-1 pertains to *attributes* that comprise a *single* kind of artifact and the relationships among attributes. These constitute a system. The theory does not pertain to multiple artifact classes or their combined inventory of attributes, which need not constitute a system. It is the organization of attributes in the context of each other as a physical, formal, technological, syntactic, and semantic system (see pp. 216–219; also Carr, Chapter 6:160), and the constraints that attributes thus come to pose on each other during their production, use, and display in a set range of contexts, that leads in part to the predictability of their causal factors.

THE HIERARCHY OF PROCESSES AND CONSTRAINTS

In this and the following four sections, each of the hierarchies shown in Table 7-1 are described. The bridging arguments that link them are also presented. This section begins by showing how the

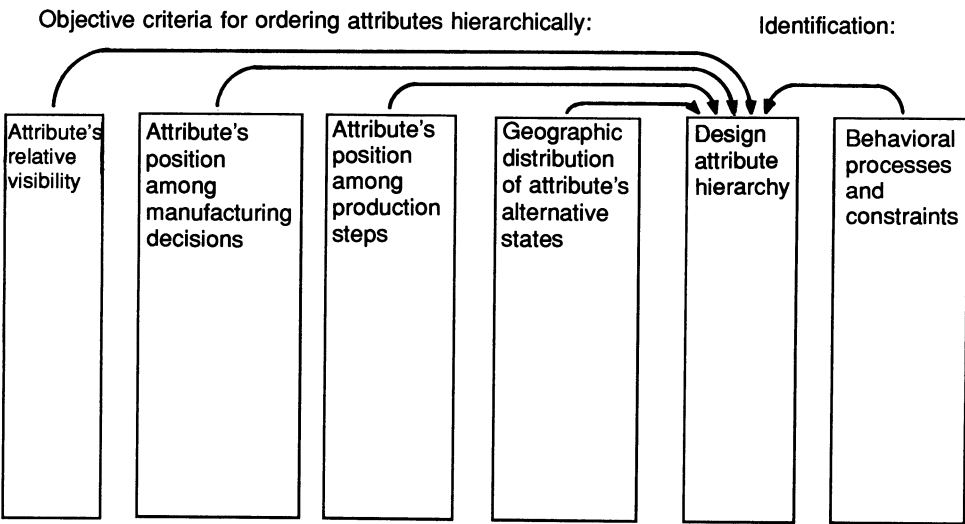


Figure 7-1. The framework presented in Table 7-1 is a middle-range theoretic framework in that it provides objective criteria for “identifying” (i.e., assigning etic meaning to) design attributes. The specific form of attribute visibility (column 1) that is relevant is the attribute’s “absolute contextual visibility” compared to that of other attributes (see Table 7-5).

various processes and constraints that can determine an artifact's design can be envisioned as being arranged hierarchically. Then, definitions are given for and distinctions are made between four categories of processes that are not clearly distinguished in current archaeological literature. These are active, passive, conscious, and unconscious processes.

The Hierarchical Arrangement of Processes and Constraints

The most fundamental kinds of processes and constraints that can determine an artifact's design, and that are considered explicitly in the theory developed here, are characterized in general terms in Table 7-1 (column 7) and enumerated in detail in Table 7-2. These processes and constraints can be arranged hierarchically into three major levels: (1) technological; (2) social; and (3) finer-scale familial, personal, psychological, and physiological processes. Processes that operate at the social level, in turn, can be arranged from those pertinent to larger entities such as interaction spheres and a society as a whole to those pertinent to smaller social segments (cf. Conkey 1990:12 for a dynamic view of social units). Within each level, processes can then be arranged from active to passive and conscious to unconscious processes.

Carr and Neitzel (Chapter 1:Table 1-1, columns 3, 4) inventory a somewhat wider range of factors, especially ecological and psychological ones. These additional factors are not considered here and comprise areas for future theory-building efforts.³

The ordering of processes and constraints from technological to personal, as defined here, is truly hierarchical in nature. The lower the level of a process, the more processes within which it is embedded. (1) Technological processes are defined as those that are solely technological in nature. (2) Social through personal-level design processes are embedded within technological ones. Specifically, all design attributes that actively or passively reflect society, social groups, or the person are technological in the sense that the attributes occur within a manufacturing sequence (Sackett 1985). For example, the manner in which a biface is thinned may be socially constrained, but the fact that thinning a biface is a manufacturing process makes this attribute technological as well. (3) In a similar way, personal-level design processes are embedded within both technological and social ones. The attributes that an artisan chooses to express his or her individuality through combining them in a unique way will largely be those drawn from a socially constrained pool of attributes which are the product of the history of that social unit. The attributes that an artisan chooses will also be expressed through a manufacturing sequence.

This structuring of processes is complex. It is not mirrored by the terms that archaeologists have used intuitively to name the processes that determine an attribute or to refer to attributes—for example, “technological-,” “social-,” or “personal-” level processes, or attributes that are “technologically,” “socially,” or “personally” determined. In common usage, the term that is used to name the processes that determine an attribute, or to refer to an attribute, is always the *finest-grain* process (Figure 7-2). For example, a person's unique selection of a particular combination of attribute states from a wide set of socially and technologically constrained states is called a personal-level process. It is not called a personal *and* social *and* technological-level process. And the attribute is thought to reflect the person, not the person and society and technology.

This practice of naming processes and attributes by the finest-grained one that operates is retained in this chapter for simplicity. However, the more complex, hierarchical structuring of processes and attributes is important to remember.

Contrasting with the intuitive archaeological approach to naming processes and attributes is that of Sackett (1985). He calls all attributes technological, after this most encompassing determin-

³Carr and Neitzel (Chapter 14) provide some guidelines for such development. However, it should be recognized that factors of the technological level defined here can be envisioned as a subset of the ecological-level factors that Carr and Neitzel (Chapter 1) enumerate. This is true to the extent that natural, raw material properties, distributions, availabilities, and related characteristics of an ecosystem constrain technological possibilities.

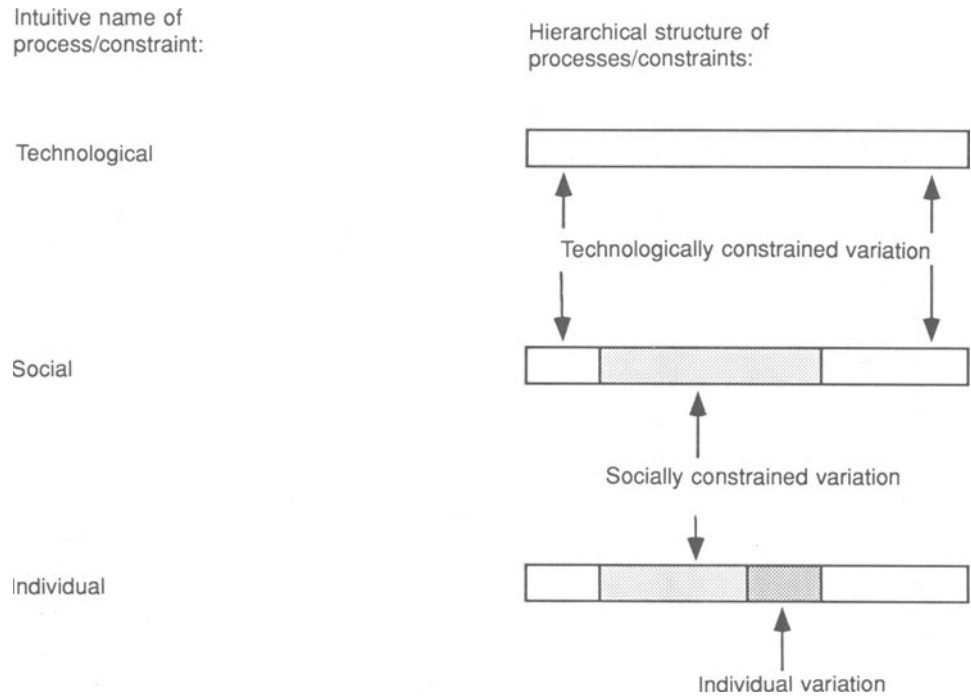


Figure 7-2. The processes and constraints that determine a design attribute's character are hierarchically nested. However, in common, intuitive terminology, the process/constraint by which the attribute is referred, and that is assigned to it as determining its character is the finest-grained one.

Table 7-4. Active and Passive, Conscious and Unconscious Processes

Dimension	Active (controlled)	Passive (uncontrolled)
More conscious (aware)	Expression of social identity Active interaction, stylistic mimicry Expression of other social messages ^a Expression of metaphoric information about the social order, cosmology Expression of personal identity Expression of other personal messages ^a Personal preferences Enculturation Depth-psychological, archetypal, mythological themes	Technological, methodological constraints Technological, raw material constraints Shared culture history of interactions Enculturation Passive interaction, casual learning between groups Family and personal histories of interaction Individual habitual methods of manufacture
Less conscious, unconscious (less aware)	Expression of metaphoric information about the social order, cosmology Projected messages of social or personal identity Depth-psychological, archetypal, mythological themes Personal preferences or inspirations Personal, selective memory	Shared culture history of interactions Enculturation Family and personal histories of interaction Individual habitual methods of manufacture

^aSee Table 7-2 for a listing of messages.

ing process. This taxonomic practice is confusing and is not used here because it does not recognize the hierarchical narrowing of constraints (Figure 7-2). In this chapter, only attributes that are solely technologically determined are called technological.

Active, Passive, Conscious, and Unconscious Processes

Processes within each of the social, interacting artisan, and personal levels are ordered from active to passive ones and/or conscious to unconscious ones (Table 7-2). The active–passive continuum and conscious–unconscious continuum are two distinct dimensions of variation. They require explicit definition. This is necessary because in current archaeological literature (e.g., Braun and Plog 1982; Hodder 1982a; Sackett 1985; Wiessner 1985), the terms “active” and “passive” have been used in multiple ways by different authors, often implicitly, and without clear distinction from the conscious–unconscious dichotomy.

Active and passive processes are distinguished by the amount of *control* that the artisan has over them. For example, messaging status distinctions is an active, communication process within the control of the artisan. In contrast, the constraints posed by raw materials or by the pool of motifs that are available for selection as a product of culture history are passive and beyond the artisan’s control.

Conscious and unconscious processes are distinguished by the level of *awareness* that the artisan has of them. For example, an artisan may be conscious of some messages of social and personal identity or metaphoric information about the social order that he or she actively invests in an artifact. The artisan may be less conscious or unconscious about other, social metaphoric and depth-psychological, archetypal themes that he or she encodes into the piece. Much of the mental activity of an artisan or perceiver during the production and viewing of an artifact occurs and remains at a semiconscious, preverbal level. Pryor (1985) calls this the “practical conscious.”⁴

Table 7-4 shows the distribution of many processes within a cross-tabulation of the active–passive and conscious–unconscious dimensions. Note that some processes vary in their nature and fall in multiple categories. Especially significant is enculturation. In much archaeological literature, enculturation has been naively equated with only passive learning. It has been separated from broader contextual factors (e.g., power relations, family cycles, the etiquette of criticism) that make its character more variable (Carr and Neitzel, Introduction to Part III; Pryor and Carr, Chapter 8), as Table 7-4 shows. Also note in Table 7-4 that many passive processes can be either conscious or unconscious in nature.

Active processes vary in the expanse of the spheres over which control is attempted or achieved and the degree to which the artisan attempts control. Three kinds are definable: (1) Active processes that involve the least control include simply the *expression* of personal preferences and inspirations and social traditions for internal, personal reasons (Rosenthal, Chapter 10). (2) Processes that involve more control include the *communication* of personal and social messages to others for adaptive purposes that are not aimed at changing the existing social order (Wobst 1977; Sackett 1985). (3) Processes that involve the most control include social strategies for *negotiating, manipulating, and/or altering* the social order (Hodder 1982a:84–85; Wiessner 1983). These three kinds of active processes have not been clearly distinguished in the archaeological literature.

⁴Most polar distinctions that might be made between conscious and unconscious processes, especially among active processes (Table 7-4), are artificial. Both the production and perception of an artifact involve mental processes that bridge the unconscious to the conscious. During production and perception, unconscious content and meaning is brought into more conscious levels of the psyche and integrated with other conscious content and meaning at those levels. These levels include but are not restricted to the preverbal, semiconscious level that Pryor (1985) calls the “practical conscious.”

THE VISIBILITY HIERARCHY

This section elaborates on Wobst's (1977) and Hardin's (Friedrich 1970) basic observation that the visibility of a design attribute correlates with the kinds of processes that determine it or are reflected by it. The section has four parts: First, the concept of visibility is defined in absolute and contextual terms. Second, the general nature of arrangement of the visibility hierarchy is discussed. Third, a large number of bridging arguments that link the visibility of an attribute to the processes that potentially may determine it are presented. Finally, the bridging arguments are used to integrate the information exchange and social interaction theories of style.

Visibility Defined

The visibility of an attribute depends on more primary physical and contextual variables. Those most essential are listed in Table 7-5.

Using these variables, four kinds of visibility of an attribute can be defined. These are its absolute physical (AP) visibility, its absolute contextual (AC) visibility, its relative physical (RP) visibility, and its relative perceived physical (RPP) visibility (Table 7-5). Distinguishing these kinds of attribute visibility is necessary if systematic relationships between form and process are to be found. However, archaeological literature in general does not make these distinctions. It moves freely, particularly between the physically and contextually defined kinds of attribute visibility (Voss, 1982; Hardin 1970; Braun 1987, Chapter 5).

Of the four kinds of visibility, the absolute physical visibility of an attribute is most essential to the arguments that link form to process below. The AP visibility of an attribute determines the contexts of viewing and social situations in which the attribute can and cannot easily be seen, communicate messages, be copied, and so on. In setting these limitations, the AP visibility of an attribute thus also determines the kinds of active processes that the attribute can and cannot reflect at the social, interacting artisan, and personal levels. AP visibility is thus useful in developing middle-range theory that applies across multiple contexts.

The absolute contextual visibility of an attribute summarizes the interaction of form and context into one measure of visual effectiveness. It is useful when analyzing material styles within one context. However, by combining both physical and contextual parameters, this measure of visibility does not allow the varying relationships between form, context, and process to be evaluated across multiple contexts and the building of middle-range theory.

The two measures of relative visibility are most useful in defining the hierarchical relationship among attributes of an artifact. However, they cannot be used by themselves in theorizing about the linkages between form and process because they do not measure the ease with which an attribute can be seen or comprehended at given distances in given social situations.

The General Nature of Arrangement of the Visibility Hierarchy

Attributes that are ordered according to their relative physical visibility usually follow a general pattern. Typically, they range from: (1) the overall size, form, color, texture, and/or movement of an item's design, as perceived in a Gestalt manner; through (2) its primary, secondary, and further partitions of composition and layout; to (3) the details that fill the partitions. An example of a hierarchy of attributes arranged by their RP visibility is shown in Table 7-10 (p. 217) for a piece of clothing. The attributes range in their RP visibility from the highly visible overall form of the item (dress vs. slacks), through highly to moderately visible features such as color and neckline form, to the more obscure details of adjunct decoration and stitching.

This general format of the visibility hierarchy often holds, but it is not universal. Case-specific variation in almost any of the primary physical variables that determine an attribute's AP visibility

Table 7-5. Defining the Visibility of an Attribute

Some physical variables that determine an attribute's visibility

1. The attribute's size
2. The degree to which the attribute contrasts with other attributes that form its background
3. The number of alternative states that the attribute takes and their range of contrast in a population of artifacts. This in turn depends on culture-historical factors, natural environmental limitations, and data coding schemes (see text)
4. The attribute's complexity. This determines its comprehensibility and ease of decoding
5. The attribute's frequency in the artifact of which it is a part
6. Whether the attribute is more visible in the endproduct or during artifact production

Some contextual variables that determine an attribute's visibility

7. The geographic density of the artifact of which it is a part
8. The social and physical contexts of artifact use. These, in turn, determine:
 - (a) The distance from which the attribute is typically viewed
 - (b) The openness or closure of the context of viewing
 - (c) The number of viewers
 - (d) The stillness or motion of the object or viewers (Lowman and Alland 1973:7)
 - (e) Lighting conditions
9. The visibility of the attribute during artifact production versus artifact use and the different audiences present during both
10. The degree to which the attribute and artifact contrast with the natural and built environment's colors, forms, etc., which serve as a background (Lowman and Alexander 1973:19)
11. The use-life of the artifact
12. The time over which traditional prototypes are preserved and can serve as models for learning
13. Learned cognitive patterns of perception

Kinds of attribute visibility

1. The *absolute physical visibility* (AP visibility) of an attribute and its alternative states when viewed from some standard distance and from an objective physical-engineering standpoint, alone. This depends on the physical variables, 1–6.
2. The *absolute contextual visibility* (AC visibility) of an attribute and its alternative states when viewed from a distance that is determined by the context. This depends on both the physical and contextual variables, 1–12.
3. The *relative physical visibility* (RP visibility) of an attribute and its alternative states compared to other attributes and their alternative states from an objective physical engineering standpoint, alone. This depends on variables 1–6. The relative physical visibility of an attribute does not change with the viewing distance.
4. The *relative perceived physical visibility* (RPP visibility) of an attribute compared to other attributes. This depends on all of the physical variables, 1–6, plus learned patterns of cognitive perception (variable 13). It does not change with the viewing distance, but may change from culture to culture.

(Table 7-5, variables 2–6) can lead to a different ordering of attributes. For example, consider variable 3, the range of variation of an attribute's alternative states. This can considerably affect an attribute's AP visibility, its RP visibility and specific position within a visibility hierarchy of all attributes, and the behavioral meanings that the attribute can assume. An illustration of this circumstance can be found in the attribute, the type of fiber used to make a fabric. This attribute could have a high physical visibility relative to other attributes if silk, wool, and nonlustrous bast fibers were the alternative states taken by it in a population of fabrics. The fabrics made of different materials would differ notably in their Gestalt-perceived texture and color. Also, in this case, the attribute might have technological meaning. Silk might be necessary in the production of satin weaves, to bring out their luster. Wool might be necessary to make felt cloth (Emery 1966:108, 22). Bast fibers might be used more widely for other purposes. The attribute, fiber type, might also have social meaning. Silk might be used for expensive

clothing used in formal social situations. Bast fibers might be used for inexpensive clothing worn daily. In contrast, the attribute, fiber type, might have a poor physical visibility relative to other attributes if the population of fabrics were made with only nonlustrous bast fibers of similar kinds. Also, in this case, the attribute's variation might reflect only personal preferences or the shared history of schooling of closely interacting artisans (Pryor and Carr, Chapter 8).

Cross-cultural differences in perception (Table 7-5, variable 13), and in judgments of the RPP visibility of attributes, also lead to case-specific variation in the arrangement of attributes in the visibility hierarchy and deviation from the general pattern (Washburn 1983a, Chapter 4). For example, care in the production and weave of baskets, as manifest in their textural fineness and regularity, is more "visible" to the Pomo Indians of California than is the color of the weaving material (J. Pryor, personal communication). In contrast, for a lay Westerner, the color of the basket would probably register first. Similarly, lowland South Amerindians do not perceive the colors of a surface along simply the Western scales of hue and chroma (darkness), but also consider their reflectivity (Roe, Chapter 2). A slight difference in hue and chroma between two darkly colored surfaces, which would normally be perceived as poorly to moderately visible by a Westerner, would be perceived as more visible by a lowland South Amerindian if the surfaces differed in their reflectivity.

Another way in which cross-cultural differences in perception might lead to case-related differences in the arrangement of attributes in the visibility hierarchy is by affecting the number of alternative states of an attribute that are recognized. For example, the number of states of color recognized by a culture varies greatly among cultures (Berlin and Kay 1969). For an artifact class with a given range of color, societies recognizing more subdivisions within that range might perceive the attribute of color as more visible, relative to another attribute, whereas societies recognizing fewer color subdivisions might perceive the attribute of color as relatively less visible.

In sum, although there is a tendency for certain broad classes of attributes having greater or lesser RP visibility and for attribute visibility hierarchies to have the general form of arrangement described above, this pattern is not universal. The case-specific states of the primary variables that determine an attribute's AP and RP visibility (Table 7-5) must always be considered when defining a visibility hierarchy.

Attribute Definition and the Arrangement of the Visibility Hierarchy

The primary physical and contextual factors listed in Table 7-5 are not the only factors that determine the visibility of an artifact's attributes and their hierarchical arrangement. Also relevant is the manner in which the attributes have been defined analytically. Two aspects of attribute definition are important. First is the kind of scale along which the attributes' states are measured. Second is the level of generality with which the attributes' states are defined.

Scales of Measurement. Attributes of an object can be measured on nominal, ordinal, or continuous scales. Voss (1982) has equated nominal-scale attributes with physically visible ones and continuous attributes with physically obscure ones. He suggested analyzing these two kinds of data separately, in order to separately measure social communication and social interaction, respectively.

This strategy is methodologically attractive because most statistical methods operate on data of only one scale. However, the basic equation of nominal-scale attributes with visible ones and continuous attributes with obscure ones is not universally true. This is so because the visibility of an attribute depends on the distribution of and contrast between its alternative states. Specifically, if a continuous attribute has vivid modalities, it can operate like a visible, nominal-scale attribute (Spaulding 1982). For example, the length, width, and overall size of !Kung San projectile points are twice as small as those of G/wi and !Xo San points. The two modes of point sizes do not overlap in their range. Thus, in this case, length, width, and size are attributes with high relative physical visibility and distinguish San language groups, even though the attributes are continuous. Similarly, a nominal-scale, multistate categorical variable can operate like an obscure, continuous variable if all of its

alternative states are similar. An example would be the attribute, color, in a case where all artifacts are close shades of blue.

Thus, it is not possible to generalize about the physical visibility of nominal-scale and continuous attributes. The degree of continuity in the states of a nominal-scale attribute, and whether modalities occur in the states of a continuous attribute, must always be noted when evaluating their physical visibility. In turn, nominal-scale and continuous attributes can each vary from one data set to another in the range of processes and constraints that they reflect, depending on the distribution of and contrast between the states they take.

Attribute State Generality. The level of generality with which the states of an attribute are defined and coded must also be considered when evaluating its physical visibility. The generality of an attribute's states can affect their contrast relative to each other and, thus, the physical visibility of the attribute (Table 7-5). For example, again consider the attribute, the type of fiber used to make a fabric. The states defined for this attribute for a population of fabrics might make the simple distinction between plant and animal fibers. This distinction might be highly visible. Alternatively, more specific but less visible distinctions at the family, species, or variety levels might be used as the states of this attribute. Thus, an attribute can vary in its physical visibility depending on the generality with which its states are defined. This is so when the definition of an attribute is varied for a single data set as well as between data sets. In turn, the processes and constraints that the attribute reflects can differ with its definition.

Bridging Attribute Visibility to Determining Process

Attributes of different absolute contextual visibility reflect different behavioral and other processes and constraints in a complex way. In general, the greater the AC visibility of an attribute, the more processes and constraints that it potentially can reflect. Thus, in Table 7-1, columns 2 and 6, attributes with high AC visibility, for example, can reflect technological, active social, passive social, or active personal-level processes/constraints. In contrast, poorly visible attributes can reflect only passive social, active personal or passive personal-level processes/constraints.

A number of bridging arguments explain the assignments of etic meaning that are given to attributes in Table 7-1. These arguments are presented below, moving from visible to obscure attributes and from technological to social and finer-level processes. Then, both cross-cultural regularity and society-specific variation in these relationships are related to a fundamental parameter that has not previously been considered in theories of style. This is the priority given to messages of different kinds by a society and by individuals.

Technology. Attributes with the highest AP visibility may include the color, size, shape, movement, predominant directionality, and overall perceived texture of an object. These may reflect solely technological factors, either raw material or procedural (Table 7-2). For example, the color of textiles or stone tools in a region may be determined simply by the kinds of plants or stones that are available there. The upper size limit of stone projectiles in a region may reflect only the maximum size of cobbles that are available. The coarse flaking of a stone tool and its Gestalt-perceived surface texture and patterning may reflect simply the coarse grain of the raw material that is available. The shape of a bifacial stone tool, too, may reflect raw material grain to the extent that this poses limits on resharpening, such as the maximum length of thinning flakes that can feasibly be removed (Hoffman 1984). Whether static rectilinear or dynamic curvilinear designs are incised into a medium is encouraged or discouraged by its grain and the ease with which incisions can be made across the grain (Roe 1979:195).

Visible Attributes and Their Message Potential. Attributes with high to moderate AP visibility, but not obscure ones, can actively communicate any of a wide range of messages, from regional and

society-wide messages to those pertaining to smaller social segments or the individual (Table 7-2). This potential results from the diversity of viewing distances (e.g., far, close) and social situations (e.g., public ceremonial aggregations; smaller, private meetings) in which visible attributes are apparent and, thus, the diversity of audiences that can observe them (Braun, Chapter 5).

Messages of Social Units of Varying Scale. In the simplest distribution of social messages among attributes of an artifact, those messages that pertain to larger social units are encoded in attributes of higher AP visibility, whereas messages that pertain to smaller and smaller units are encoded in attributes of lower and lower AP visibility. For example, attributes that communicate about the society at large are often more visible than those that communicate about intrasocietal kinship, residence, or sodality groups. And these attributes are often more visible than those that are chosen to communicate family-level or personal messages. In my experience, this structuring of messages is found commonly in traditional societies, where society and social roles and identities tend to predominate over the individual and a personal sense of self.

Good examples of this pattern are documented by Wobst (1977: Tables 2, 3) in the folkdress of Albanian and Romanian language groups in Yugoslavia during the 1930s. Folkdress clearly communicated social identities. Those dress attributes with higher AP visibility reflected more inclusive social groups. For Albanians, coat color distinguished northern from central and southern regions; pants or jacket style discriminated subregions; large decorative features of the shirts, pants, and coats varied among valleys or villages in a clinal manner that paralleled interaction patterns; and small decorations indicated personal rank. For Romanians, shirt cut or color varied clinally among subregions; the color or combination of motifs on shirts varied clinally among villages; and the quality and quantity of least visible decorations reflected individual status, occupation, or family. Several other examples where messages that pertain to larger social units were encoded in attributes of higher visibility are well documented in ethnographic and archaeological literature.⁵

⁵A clear example of where messages that pertain to larger social units are encoded in attributes of higher visibility is found in the painted designs on New Guinea Maring war shields (Lowman and Alland 1973). War shields were painted in bold patterns and colors primarily to communicate the warrior's power and to draw the enemy's aim off target during battle. However, they also appear to have indicated group identity, for they were posted at the gates to a group's territory (Lowman and Alland 1973:20). The most visible attribute, general layout and overall perceptual effect of the entire shield, was shared by the Maring at large and contrasted with the layouts of shields of neighboring tribes. Maring shields bore geometric designs and were characterized by vertical bilateral asymmetry with horizontal asymmetry and occasional oblique asymmetry. Shields of other New Guinea tribes bore anthropomorphic designs and lacked asymmetries (Lowman and Alland 1973:30, 34, 44). Less visible, constituent motifs and the details of their layout differed between Maring local groups, but with much overlap as a result of the copying of designs and the capture of enemy shields. Of the perhaps dozen types of motif–layout combinations used in the Maring area, six or seven might have been used by a local group (Lowman and Alland 1973:24,30). Least visible were variations in motif shape and internal structure and an optional orchid fiber edging. These variations were made idiosyncratically according to the preference of the artisan team who manufactured a shield (Lowman and Alland 1973:22,24,34).

Other examples where the AP visibility of attributes correlates with the scale of the social units over which they are distributed can be cited. However, it is not as clear (Sackett 1985) as it is in Wobst's data and Lowman and Alland's data that the attributes actively communicated messages and, thus, that a communication process was responsible for the relationship between attribute visibility and social unit size. For instance, Wiessner (1983: 265–269) found that, for Kalahari San projectile points, their most visible features, including size and certain aspects of tip, body, and base shape, distinguished large, risk-pooling language groups. A somewhat more subtle difference in body shape distinguished smaller band clusters within one of the language groups (see pp. 203–204 for details). Similarly, Carr and Maslowski (Chapter 9: Table 9-6) show for Ohio Hopewell fabrics that moderately visible attributes, such as the overall textural coarseness and the directionality of texture of spaced weaves, distinguished social groups in different major river valleys. Somewhat more subtle differences in the weft element spacing and textural directionality of spaced and compact weaves distinguished more local groups within one of the valleys.

There are three factors that explain the common relationship between attribute visibility and the scale of the communicating social unit. (1) As the social unit becomes smaller, social encounters become closer and more face-to-face. These smaller viewing distances permit attributes of lesser AP visibility to be used to communicate the unit's messages. This factor, alone, sets only the *lower* limits of AP visibility that an attribute must have to effectively communicate. It limits, for example, intersociety or society-wide messages, which often are broadcast over only long distances, to attributes of high AP visibility. And it allows personal or small-group messages, which are often broadcast over shorter distances, to be expressed in attributes of lesser AP visibility. However, the factor of viewing distances does not place any *upper* limit on the AP visibility with which a message must be expressed for successful communication. It does not, for example, prohibit personal or kin group messages from being expressed in attributes of high AP visibility. Thus, in Table 7-1, columns 2 and 6, highly to moderately visible attributes are shown to be capable of communicating the messages of units of a broad range of sizes, from the individual to the regional interaction sphere.

There are other factors, however, that in combination do tend to constrain the upper limit of attribute AP visibility within which messages of smaller units are expressed. These factors thereby strengthen the correlation between attribute visibility and the scale of the communicating unit. These factors are: (2) the limited number of visible attributes that are available in an artifact for expressing messages, and (3) the relative values or priorities that a culture places on various messages for communication. Specifically, because an artifact has a limited number of visible attributes, not all potential messages can be expressed in them. Thus, those messages that are deemed most important culturally, and that it is desirable to express most effectively, will tend to be encoded in the available attributes that are most visible. Less important messages will be encoded in what attributes remain. To the extent that messages that pertain to larger social units are given priority culturally over messages that pertain to smaller units, the messages of larger units will be expressed in attributes of greater AP visibility, which are more effective for communication; the messages of smaller units will be left for expression in more obscure attributes. This argument and the concept of message priorities are elaborated on pages 201–205.

The common correlation between the AP visibility of an artifact's attributes and the size of the social units whose messages are expressed by those attributes is not universal, however. This is so because the context of use and viewing of an artifact is as critical as the AP visibility of its attributes in determining their potentials for actively communicating messages. Thus, the AC visibility of an attribute, not its AP visibility, is the final determinant of its communication potential (Table 7-1, column 2). If viewing and interaction distances are great, such as the intermountain valley distances over which Yugoslavian headdresses traditionally communicated ethnic affiliation (Wobst 1977:332), then the argument holds that attributes must have a high AP visibility to be adaptive in allowing the prediction of an oncomer's social affiliation or the perception of other social messages. The same model of interaction and reasoning applies well to colosseum-like events, such as football games. There, participants are seen from afar and must be differentiated with attributes of high AP visibility, such as the color of helmets and jerseys. In contrast, in other social situations, the distances of interaction may be small, as when persons of different ethnic groups or communities assemble and intermingle in a restricted space. Periodic alliance-creating ceremonies, such as the Tsembaga Maring kaiko (Rappaport 1968, 1979:39), the "Yanomamo" feast (Chagnon 1983), the Huron Feast of the Dead (Trigger 1969), and possibly Ohio Hopewell mortuary rites (Maslowski and Carr, Chapter 9) are examples. In such cases, the messages of larger-scale social units can be expressed with design attributes that are more subtle in their AP visibility, yet have sufficient AC visibility to be seen.

Finally, in the medium of language rather than material culture, A. Yengoyan (personal communication) notes that in interior Australia, neighboring regional bands define themselves at the most visible level of the lexicon rather than at the more subtle levels of grammar and phonology. Data on lexical, grammatical, and phonological "implicational hierarchies" (Hudson 1980:170, 185186) hint that this pattern occurs elsewhere as well.

The messages that social units of various sizes may communicate with attributes of high AC visibility are diverse (Table 7-2). Messages of social affiliation may allow people to predict the affiliation of oncomers prior to encounter so that social intercourse can be planned, eased, and made cooperative (Wobst 1977). Messages of social affiliation may also, however, openly express competition, confrontation, or domination. Messages of social mimicry or complementarity may be encoded in order to encourage cooperative interaction, allow settlement, or permit passage. Legal and territorial messages of prescription, proscription, ownership, and authorship, and the conscious mythic-religious symbolic messages which are found in public iconography may also be expressed by attributes of high AC visibility. This diversity of messages contrasts with the heavy focus in current archaeology on messages of social affiliation and their specific use to ease social intercourse. That focus is, in part, a happenstance of the example that Wobst (1977) chose to illustrate his information exchange theory of style.

Personal Messages. Attributes that express personal identity or other kinds of personal messages (Table 7-2) can range in their AP visibility from high to low. This broad range of possibilities arises from the face-to-face nature of individual interactions, which permits messages to be coded and perceived in attributes of essentially any AP visibility. Restriction of personal messages to lower visibility attributes, alone, will occur when social or family-level messages are given precedence over personal expression.

An example where personal messages are communicated in attributes of high AP visibility is head shaving among the Tallensi in order to symbolize bereavement. Different amounts of the head were shaved, depending on the closeness of the bereaved to the deceased. The heads of spouses and children were shaved completely. Only half the heads of grandchildren were shaved. These shavings were compulsory. The heads of classificatory children might be shaven completely, but this was not compulsory (Fortes 1949:161,179,238–239).

Yugoslavian folkdress and Maring war shields (see p. 189) are examples of artifact classes where personal messages were communicated or personal preferences were expressed in attributes of lower AP visibility. Social messages were given priority and conveyed in more visible attributes. Examples where personal messages were communicated or personal preferences were expressed through attributes that range widely in their AP visibility include some artifact classes of the !Kung Bushmen, San José Tarascans, and contemporary Western culture.⁶

The attribute visibility level and priority with which personal messages are expressed in a given medium or artifact class may apply to all social contexts within a culture or may vary with the social situation (see pp. 206–210). The priority can also vary from medium to medium as a function of the

⁶Individual !Kung identified their own arrow heads on the basis of not only attributes of moderate AP visibility, such as body shape and barb shape, but also minor details such as the direction of filing of the edge (Wiessner 1983). The presumption is that individual identity was communicated by both kinds of traits.

Individual San José Tarascan potters differed in their preference for painted decorative attributes that range from highly visible to moderately obscure (Table 7-7, pp. 199–201). Attributes of high AP visibility that varied in preference among potters include the basic layout of the vessel into two versus three design fields, whether the interior as well as exterior of the vessel is used as a design field, and the overall perceptual texture of design fields, which depends on the kind of design configuration selected as a fill. Less visible attributes that varied in preference among potters include the design configuration and design elements used to fill a design field. All of these ceramic variations resulted from the active expression of individual preference, if not the communication of individuality (Friedrich 1970:337; Hardin 1977:113–116). They contrast with variations that reflect only passive personal factors such as habitual methods of manufacture or motor skill (Table 7-7, pp. 199–201). Design element shape, line width, the manner of terminating brush strokes, the pressure of application of brush strokes, and paint thickness are examples of design variations determined by passive personal factors (Hardin 1977:119–125).

Finally, American and British youths of the late 1980s communicated their personal identities with highly visible, uniquely dyed punk hairdress (Hodder 1986:47), but also with obscure personal motifs and ornamentation on clothing.

contexts in which they are crafted and used. Roe (Chapter 2) calls those contexts and media in which it is fit for a person to openly express him or herself “realms of protected deviation.” Finally, the priority given to the expression of the person varies among cultures with their differing emphasis on individuation (Carrithers, Collins, and Lukes 1985). The value placed on the individual and freedom of individual expression in punk Anglo-American hairdress (Hodder 1986:47) is clear.

Obscure Attributes. Attributes of poor AP visibility, which Hardin (Friedrich 1970) calls the “nuances” of style, can express only passive, social-level processes, or active or passive processes at the levels of interacting artisan networks or the person. Obscure attributes are sufficient for communicating messages and can be copied or taught only where contact is closer, more intimate, and more frequent among interacting artisans or other dyads. Obscure attributes are insufficient for communicating messages at larger distances within larger social units. Table 7-2 lists the diverse array of processes that obscure attributes can reflect.

Kinds of Obscure Attributes. Attributes of poor AP visibility are of three kinds. First are small, nonrelational attributes, such as small design elements or some maker’s marks. Second are very simple relational attributes, such as counts, dimensions, and dimensional relations. Some examples for painted media include the number of design elements or configurations within a design zone, the widths of lines that separate design zones, and the relative dimensions of lines or zones. Finally, there are more complex relational attributes. These include correlations and “co-occurrence restrictions” (Hardin 1983a:313) among attributes within or between design levels, other design grammatical rules, and the structure and complexity of design grammars. Examples of complex relational attributes include metric, similarity, affine, and projective geometric transformations, the most well-discussed archaeologically of which are metric symmetry patterns (Washburn and Crowe 1987; Washburn, Chapter 4); shape grammar operators (Roe 1980; Knight 1986; Chippindale 1986); Chomskian grammatical structures (Muller 1979; Hassan 1986); and metaphorical structures such as dual triadic dualism and chromatism (Roe, Chapter 2).

All obscure attributes of the third kind, but not all of the first and second, comprise “isochrestic variation” in Sackett’s (1982) terms. Complex relational attributes usually are socially traditional, passively learned practices. In contrast, small and simple relational, obscure attributes can reflect a wide variety of active and passive, personal, and personal physiological processes (Tables 7-2, 7-7).

The analytical categories of “composition” and “structure” that are used by some other researchers (Graves 1982:307; Kent 1983:120; Washburn 1983a, who follow Shapiro 1953:259) do not correspond with the distinction made here between “visible attributes” and “obscure attributes.”⁷ The two pairs of terms should not be confounded.

Physically Obscure Attributes and Interaction. Several kinds of interactive processes, at the levels of the social group and interacting artisans, are defined in Table 7-2. Although these processes are usually lumped under the general term “social interaction” in archaeological literature, their distinction is important in tracing form–process relationships. The reader should consult this table in preparation for the discussions on interaction in the following sections.

⁷Washburn (1983), Kent (1983:120), and Graves (1982:307), following Shapiro(1953:259), make a distinction between the “structure” and the “composition” of an artifact. Structure is defined as the way a total design field is subdivided for decoration and the type of symmetry this creates. “Composition” refers to content—the nature of the elements, motifs, or other units that fill the design field. These terms classify both physically visible and obscure traits together. The term “structure” does not equate with obscure attributes. Also, the dictionary definition and common use of the term “composition” is the arrangement and relations among constituent elements of a thing, not the content of the thing. For these reasons, the terms “composition” and “structure” are not used in the unified, middle-range theory of design.

Attributes of poor AP visibility are not perceived or comprehended with the catch of the eye; rather, they must be inspected. Consequently, they are not easily copied and do not diffuse quickly through a society or between societies. Thus, their distribution within a society can indicate family networks of artisans, more informal networks of passively interacting artisans, or joint participation in craft schools. Social segments such as kinship groups, residence groups, and formal sodalities may also be revealed (see p. 197). Finally, the similarity of obscure attributes between social groups is a good indicator of the degree of active group interaction (Friedrich 1970) through intermarriage, adoption, artifact exchange, or intimate ceremonies, or the degree of passive group interaction through less structured contacts. In contrast, attributes and artifacts of greater AP and AC visibility, which are easily copied and which can diffuse quickly and widely, are not reliably good indicators of within-group or between-group interaction.

There are numerous examples where the distribution of attributes of poor AP or AC visibility has been used to reveal artisan and family networks within societies. A number of different media have been analyzed.⁸ Obscure attributes in various media have also been studied in order to distinguish larger social segments, communities, or societies, or to measure the degree of active and/or passive interaction between them.⁹ Most stylistic studies of interaction within family or artisan networks and between larger social groups have used small, nonrelational attributes or simple relational attributes. Complex relational attributes such as design grammars have been used less often.¹⁰

The utility of the obscure in tracing artisan networks and in measuring interaction holds not only for attributes of artifacts, but also for whole classes of obscure artifacts¹¹ and for the subtle,

⁸Examples where artisan and family networks within societies have been revealed by the distribution of obscure attributes include Hardin's (Friedrich 1970) and Bunzel's (1929; Roe 1979:214) classic studies of the details of Tarascan and Zuni painted pottery, Roe's (1980) study of the grammar of painted Shipibo textiles, and Pryor and Carr's (Chapter 8) analyses of Pomo basketry. Similarly, obscure attribute distributions have been used to define horizontal role differentiation within a society, such as the sexual division and complementarity of crafting (Roe 1979:212–214), and vertical differentiation by rank, wealth, prestige, power, etc. (Pryor and Carr, Chapter 8).

⁹Studies that use obscure attributes to reveal larger social segments, communities, or societies, or that measure interaction between these, include Voss's (1982) analysis of incised and stamped ceramics of the European Neolithic (Western TRB period), Washburn's (1983b) and Graves' (1982) studies of the painted ceramics of the Greek Neolithic and the contemporary Philippino Kalinga, respectively, Carr and Maslowski's (Chapter 9) study of Ohio Hopewell mortuary fabrics, a variety of studies of cordage element twist direction reviewed by Carr and Maslowski, Newton's (1974, n.d.) studies of the element twist direction of Brazilian Timbira net hammocks and the knots of bow strings, Hodder's (1982a:48–56, 68–73) study of Baringo stool morphology, interior hearth positioning, and certain calabash decorations, and Roe's (1979:192–193) discrimination of Shipibo and Conibo art of several media by line widths. Voss's (1982), Washburn's (1983b), Graves' (1982), and Carr and Maslowski's (Chapter 9) analyses contrast the distributions of low-visibility attributes with those of high-visibility attributes. They show the utility of obscure attributes, alone, in monitoring interaction.

¹⁰An example of the use of complex relational attributes to reveal interaction at the local scale, within artisan networks, is Roe's (1980:59–62) study of Shipibo fabrics. Roe traced interaction patterns among Shipibo artisans within one compound using the design grammars of their painted fabrics. He found that similarity in the design grammar rules, numbers of rules, and the depth of the design grammars of the artisans correlated well with the levels of interaction among them. At the regional scale of interaction between social groups, Roe (1987:8) showed that the distribution of dual triadic dualistic structure among highland and lowland South American societies corresponds to the limits of the Chavin interaction sphere. This correlation was found using several different media. Similarly, symmetry patterns have been shown to often reflect interaction patterns among social units within ethnic groups (Washburn, Chapter 4; Washburn and Crowe 1987) or larger regional units (Graves 1982:Table 1; Washburn 1977, 1983b:151; Washburn and Petitto 1991; see pp. 196–197).

¹¹Hodder (1982a:37–48, 84) has shown that the distribution of exchanged, physically and/or contextually obscure artifact classes, which he terms the "trivia of daily life," can indicate patterns of interaction between groups. In this way, obscure artifact classes operate like obscure material attributes.

phonological level of language.¹² The significance of obscure attributes as indicators of interaction among artisans was also recognized in the traditional “type-variety” school of ceramic typology (Gifford 1960).¹³

The alternative states of obscure attributes that represent traditional, passively learned ways of manufacturing an artifact, and that reflect interaction patterns, are among the formal variations that Sackett (1982) calls “isochrestic variation.” However, obscure attributes may reflect many other processes (Table 7-2) and isochrestic attributes may be visible as well as obscure.

Physically Obscure Attributes and Active Interaction. Processes of active interaction among communities and societies are of several kinds (Table 7-6, column 2). These processes vary in the duration over which interaction occurs. Silent trade and some kinds of ceremonial trade may involve meetings of only a few moments among the members of different communities or societies. Inter-marriage involves very extended to continuous interaction.

It is expectable that active interaction processes that differ in the duration of interaction will be reflected in poorly visible attributes of differing levels of obscurity. Processes that involve longer meetings or stays provide greater opportunity to observe the details of design of artifacts, to study and decode their structure, and even to watch their manufacture. The details of design can more readily be learned and copied. In briefer meetings, this opportunity does not exist. Thus, active interaction processes that involve extended meetings or stays can be expected to be reflected in the distribution and similarity of both very obscure and less obscure attributes among social groups. In contrast, brief meetings are more likely to be reflected in the distribution and similarity of only less obscure attributes (Table 7-6, columns 2, 3).

This pattern is expectable for only those artifacts that are not exchanged among groups and that are observable at the location of interaction. Exchanged artifacts can be studied at length after a meeting or stay and, therefore, would not indicate the duration of interaction. Minimally, the pattern would be relevant to items of dress, ornaments, and personal property taken to meetings. It might also pertain to artifacts that happen to be used or observable at the location of interaction (e.g., utensils for cooking and eating, subsistence tools, architecture). Although reasonable, these expectations have yet to be confirmed empirically.

The patterning in Table 7-6 is significant to the archaeological reconstruction of alliance patterns and their evolution in egalitarian societies. It allows one to begin to estimate the degree of psychological commitment and trust invested in interaction, the degree of structural formalization and institutionalization of alliance ties, and alliance strength. Carr and Maslowski (Chapter 9) discuss this theoretical framework in greater detail.

Physically Obscure Attributes and Drift. Analogous to the spread of design attributes over space through interaction is their drift through time. Physically obscure attributes have greater potential than visible ones for exhibiting drift in their states and the relative frequencies of states within a social group. For example, LeBlanc (1975) found drift in the width of decorative lines on pottery from the Cibola area of New Mexico over a period of less than 25 years. Binford (1963) also provides examples of stylistic drift for the details of projectile point morphology; as does Cleland (1972) for certain nondirectional variations in the designs of Jesuit finger rings.

¹²Differences between social groups in their phonological systems, which are verbally more obscure than grammatical or lexicon differences, have repeatedly been found to be good indicators of interaction between groups (Hudson 1980:172–173, 177–180).

¹³In the “type-variety” school of ceramic typology, the “variety” was defined by “minor” traits or “embellishments.” It was taken to be the product of the individual or “relatively small groups within society,” such as “potters in a village segment, a group of small villages, a community, or a group of communities (at a maximum)” (Gifford 1960:341,343).

Table 7-6. Processes of Active Interaction and the Visibility Levels of Obscure Attributes that Reflect Those Processes

Duration of interaction	Some examples of processes of active interaction among communities or societies	Visibility level of obscure attributes indicating interaction (nonexchanged artifacts only)
Long	Intermarriage among groups and extended visiting among kinsmen Extended ritual, sociopolitical and/or economic aggregations among allies and/or geographically dispersed kinsmen (e.g., Maring kaiko, Huron Feast of the Dead, Yanomamo feast, aggregations of local bands of hunter-gatherers for subsistence tasks) Utilitarian trade in neighboring villages, markets, fairs Ceremonial trade among trade partners, brief interaction (e.g., kula partners)	Less obscure through very obscure
Short	Silent trade	Less obscure attributes only

An attribute of poor AP visibility is susceptible to drift in two ways. First, its obscurity makes it susceptible to stochastic learning discontinuities between generations within a family or artisan network. These variations, in turn, may be compounded by the stochastic termination of particular families or artisan networks over time. Second, because poorly visible traits are not usually suitable for communication or social manipulation or modeling, they are not subject to directional social selection (Braun, Chapter 5).

Contextually Obscure Attributes and Interaction. The context of use and viewing of an artifact, which determines the AC visibility of its attributes, is as essential as the attributes' AP visibility in limiting their diffusion to networks of close interaction and in encouraging their drift through time. Regarding interaction, when an artifact is produced and used in a socially closed context where it is seen frequently and closely by only more intimately related individuals (e.g., kin, friends, neighbors, interacting artisans), then attributes of both high and low AP visibility will have low AC visibility. Consequently, both kinds of attributes will measure that interaction accurately. The domestic space is one context in which this effect arises. Good examples of this situation are found in Pryor and Carr's (Chapter 8) analysis of Pomo utilitarian basket mush boilers, Braun's (1977) analysis of Woodland ceramic cooking pots, and Hodder's (1982a:54–56) data on the position of hearths within huts in the Baringo district of Kenya.¹⁴

¹⁴The mush boilers studied by Pryor and Carr (Chapter 8) were used by the Pomo within their homes—a fairly closed context of use. Attributes of both high AP visibility (basket shape, design cluster) and low AP visibility (weave) were distributed among language groups in line with patterns of interaction among the groups. Similarly, the cooking pots studied by Braun (1977) were used in domestic contexts. Stylistic attributes were found to shift through time in their spatial distribution in accordance with evolutionary patterns of social interaction that are expectable for tribal societies, even though the attributes were visible, discrete design elements and configurations which one would expect to reflect broader communication patterns. Finally, the attribute, position of hearths within huts, which Hodder (1982a:54–56) studied, has high AP visibility but low AC visibility. Hodder found that hearth position tends to be homogeneous within local populations and to vary between them, perhaps reflecting interaction patterns.

Contextually Obscure Attributes and Drift. Design attributes of artifacts that are used and produced in socially closed contexts are also susceptible to drift in their states and frequencies of states over time. The low AC visibility of the artifacts and their attributes encourages drift, regardless of whether they have high or low AP visibility.

The domestic space is one kind of closed context in which design attributes have low AC visibility and drift often occurs. A second kind of context that favors drift is an ecological regime of regional population increase within a band or tribal society, where local groups or communities fission and then distance themselves socially from each other (Binford 1963:93; Cleland 1972:209). The internal conflicts that often exist within the group that divides (e.g., Turnbull 1961), the group division process, and subsequent social distancing may have several related consequences. These are the low AC visibility of artifacts and attributes among groups, learning discontinuities between groups over space and time, and, thus, drift.

A third kind of context in which design attributes are susceptible to drift is found in societies that do not archive examples of past work for future artisans to learn from and to use as a basis for their own inspirations. Here, the low AC visibility of artifacts and their attributes among generations of artisans produces learning discontinuities that encourage drift. This situation typically arises in traditional societies that lack writing and photography, but is accentuated in societies where prototypes are purposefully destroyed periodically. Roe (Chapter 2) calls this destructive process “cultural amnesia.” Examples of it include the destruction of the pots of Shipibo potters (Roe, Chapter 2) and the baskets of Pomo basket makers (Pryor and Carr, Chapter 8) upon the death of the craftsman.

Physically Obscure Attributes and Production. An attribute can have high to moderate AP visibility during the production of an artifact but low AP visibility in the end product. Attributes of this nature include the structural or foundation elements of an artifact that are partially or largely masked through subsequent production steps. Some specific examples are hidden warp or weft elements in certain fabric weaves (Emery 1966), hidden ribbing in baskets, and support structures in some buildings.

Like attributes that are physically obscure in both production and the endproduct, those that are obscure in only the endproduct are often restricted in their diffusion to closely interacting artisans or social groups. Thus, they are good indicators of social interaction. However, being apparent during production, they may diffuse more quickly among the interacting parties, all else being equal; this makes them more quickly stabilizing measures of interaction. They may consequently also be less susceptible to stochastic learning discontinuities that lead to drift.

Attributes that have high AP visibility in an endproduct but whose manufacture depends technologically upon attributes that have low AP visibility during production and in the endproduct are also often constrained in their diffusion to closely interacting artisans or social groups. Although their morphology may be noticed from a distance by casually interacting parties, they cannot be copied without closer tutorial interaction. Consequently, they, too, are good indicators of social interaction and may exhibit drift. Some examples of attributes with these qualities include certain traits of Pomo baskets, such as some weave textures that depend on subtle weaving procedures, motifs that are tied to certain weaves, and quailtop feather decorations that are attached by unobvious means (Pryor and Carr, Chapter 8).

Physically Obscure, Complex Relational Attributes Comprised of Visible Attributes. An obscure, complex relational attribute may itself be comprised of attributes having high AP visibility. Whereas the relational attribute may reflect passive interaction among persons within an artisan network or active or passive interaction between social groups, the constituent high-visibility attributes may not. They may instead communicate messages among the interacting persons or groups, or may reflect active or passive interaction among yet larger social units.

For example, Hardin found for San José Tarascan ceramics that the obscure “grammatical” organization of design elements into configurations revealed the degree of interaction among

individual artisans. It discriminated the unique style of potters in the Alejos family from the styles of other individuals in other artisan networks (Friedrich 1970:339). In contrast, the more visible, constituent design configurations and design elements were socially recognized and spread throughout the community (Friedrich 1970:Figure 4). They apparently reflected passive interaction within this larger social unit. Similar cases at larger social–geographic scales are documented by Washburn (1983b) and Graves (1982).¹⁵

Interaction and Communication Reflected in the Same, Visible Attribute(s). In contradistinction to Friedrich's (1970:337–339) conclusion, attributes that indicate networks of artisans, social groups, or interaction within or among groups are not necessarily restricted to obscure attributes. Attributes of high to moderate AP visibility may reflect social interactions if the interactions are important economically, politically, socially, and/or ecologically, and, if they come to be actively recognized, materially symbolized, and communicated. In this case, communication aligns with social interaction, both processes are expressed in the same visible attribute(s). Thus, both the social interaction and information exchange theories apply.

One example of highly visible attributes that reflect social interaction is found in Wiessner's (1983:267–268; 272) data on the design of Kalahari San projectile points. Highly visible, size and shape attributes were found to distinguish language groups. These are the broadest social units of San interaction, within which environmental risks are pooled. A second example may be found in the development of White Mountain Redware of the American Southwest. This pottery is distinguished from previous black-on-white wares by its highly visible, red background color. Graves (1982:341) interprets the ware and its color as a symbol of a regional interaction network that was economically and/or politically critical to the existence of local groups.

Obscure Attributes and Qualifications on Defining Local Social Segments. At the local scale, spatial distributions of obscure attributes that reflect interaction strictly indicate only networks of interacting artisans or the redistribution of their members or products through intermarriage, adoption, or artifact exchange. These distributions do not necessarily define kinship groups (e.g., families, lineages, clans), residence groups (e.g., households, village segments, villages), or institutionalized sodalities (e.g., work groups, fraternities). Whether any of these kinds of local social segments are indicated by obscure attribute distributions depends on whether interacting artisan networks equate with any of them. In turn, this equation depends on the adaptive context and the social lines along which enduring economic, social, and/or political cooperation occurs (Lathrap 1983:38). It also depends on the social lines along which enculturation occurs, which depends on unique culture history (Pryor and Carr, Chapter 8).

The simple Deetz-Longacre hypothesis (Deetz 1965:2; Longacre 1964) attempts to infer kinship, marriage, or residence patterns from style distributions. More recent modifications of the idea have focused on artisan coresidence (Roe 1980). However, none of these versions are cross-culturally

¹⁵A second case where obscure, relational attributes and constituent, high visibility attributes reflect different processes is found in Washburn's (1983b:151–157; Figures 9.9, 9.11) data on Neolithic mainland Greek ceramics. Relatively obscure symmetry classes that describe the structuring of design elements (the flame, net) into configurations, were distributed locally. The classes occurred within topographically delimited provinces, within which frequent social interaction was probably circumscribed. In contrast, the moderately visible flame and net design elements were regionally widespread and were not found to be useful for delineating local, socially integrated groups. Their distribution apparently reflected passive or active interaction (e.g., artifact exchange) over the region.

Graves' (1982:310, Table 1) analysis of Philippino Kalinga painted ceramic decoration closely parallels Washburn's. He found that two competitive, territorial, endogamous kin groups were much better distinguished by obscure symmetry classes used to arrange design configurations from each other than by the moderately visible design configurations, themselves.

tenable because they assume that interacting artisan networks equate with some one kind of social unit.

Passive Processes at the Social and Interacting Artisan Levels. Several processes can define the range of manufacturing options that a social group or network uses: a history of interactions shared by a culture, social group, or family; passive interaction among social groups or artisans of a network; and the passive aspects of enculturation. These processes can operate on and be reflected in attributes having any level of AP visibility, from high to low. For example, among the Pomo Indians, the process of shared culture history within sublanguage groups appears to have been responsible for some geographic patterning in both visible basket attributes (form, design layout) and a less visible attribute (weave) (Pryor and Carr, Chapter 8).

In cultural contexts where style is used actively to express social or individual messages or to manipulate or model social relations, these active processes may dominate the production and form of more visible attributes. Consequently, passive social and interacting-artisan level processes may be reflected in only attributes of lesser AP visibility. This ordering of processes among attributes is more likely to arise among artifacts made of more malleable media, which are more conducive to being used for active social or individual expression. The medium of ceramics is an example of this, in contrast to more technologically-bound media like lithics (Sackett 1982) or basketry (Pryor and Carr, Chapter 8).

Passive, Personal-Level Processes. Passive, personal-level processes include idiosyncratic, habitual methods of manufacture and physiologically based motor skills. Habitual methods of manufacture include both patterns of hand movement and the limitations on manual execution set by personally unique selections of tools (Hardin 1977:118–120).

Habitual methods of manufacture and motor skills typically manifest in design traits that have low AP visibility. Habitual methods of manufacture tend to be restricted to attributes of low AP visibility because more visible ones are susceptible to constraint by passive social norms and enculturation, or are used as vehicles of active social or personal expression. Motor skills tend to be reflected in attributes of low AP visibility for another reason. They, by definition, pertain to the details of eye-hand coordination and manual dexterity.

Many examples of attributes that reflect personal manufacturing habits or motor skills have been cited in archaeological literature for a variety of media.¹⁶

Ideation and Archetypes. Three levels of processes pertain to the broad areas of mythology, religion, cosmology and world view, social structure, and depth-psychological archetypes. These processes must be carefully discriminated for their different material correlates: First is the active, *conscious* communication of pansociety or regional mythic–religious themes or personifications, or metaphoric information about the organization of society or the cosmos. These subjects can be portrayed through either representational art or nonrepresentational symbols. Examples in representational art include the mythic supernatural beings and scenes carved on the facades of temples of some early civilizations, ritual masks that depict supernatural beings, such as the Iroquoian False Faces (Rosenthal, Chapter 10), and the animal-shaped earthworks of prehistoric Eastern Woodland Indians. Examples in nonrepresentational symbols include motifs that are structured with easily

¹⁶Some examples of attributes of basketry, fabrics, and netting that reflect personal manufacturing habits or motor skills include the form of starting and other knots (Pryor and Carr, Chapter 8; Newton n.d.). For lithic artifacts, the orientation of flake scars on bifaces (Gunn 1975) has been noted. For painted ceramics, pertinent attributes include the orientation and shape of design elements and their variation (Hill 1977, 1978; Hardin 1977:121–122); the absolute and relative sizes of and distances between design elements; the absolute and relative angles, widths, and spacing of fill lines (Hill 1977, 1978:247,252; Redman 1977:49–50); the number of brush strokes used to produce a design element; the pressure with which the brush is applied; and the manner of terminating brush strokes (Hardin 1977:121–124).

perceived binary oppositions or other readily perceived relationships. The Zinacantan's quadripartite, two-colored *olin* (Washburn, Chapter 4), Native American four-colored medicine wheels, and the prehistoric North American Woodland Indian copper/shell contrast are cases in point. As symbols meant to communicate to others in daily life or in ritual, sometimes to an audience at a distance, representational and nonrepresentational images of these kinds and their informative attributes have high to moderate AP visibility.

The second kind of process is the active, *unconscious* projection of metaphoric information about the organization of society or the cosmos, or depth-psychological, archetypal themes about relationships. Information is encoded in complex, relational attributes that are not easily comprehended, such as some triadic dual compositions, dual triadic dual compositions, chromatism (Roe, Chapter 2), or more complex associations. The attributes thus have low AP visibility. These subtle cognitive oppositions, complements, and gradations are also found in myths, fairy tales, and dreams. They are best analyzed by the methods of structural anthropology (Roe, Chapter 2) and depth psychology (Jung 1964).

A good example of the projection of a depth-psychological, archetypal theme is found in the Old Temple at Chavin de Huantar. This depicts, through dual triadic dual composition, the simultaneous segregation and complementary dependence of the sexes, their roles, and their animistic symbols in constituting society (Roe, Chapter 2).

The third kind of process is the active, *unconscious* projection of depth-psychological, archetypal personifications, such as the Hero, the Wise Old Man, or the Numinous. Because the archetypes are experienced and take form only indirectly, through cultural and personal contexts (Jung 1964), these figures will be formally equivalent to pansociety, mythic-religious personages that are communicated consciously and executed in a physically visible way. The difference between this process and the first is at the level of interpretation rather than form.

Not All Kinds of Processes Are Represented in an Artifact. Any single class of artifacts and the hierarchy of attributes that comprise them usually will reflect only some of the processes and social units listed in Table 7-2. For example, an artifact class might communicate regional, intersociety messages, reflect the passive, shared history of interactions of a community, and express an artisan's personal preferences for design, but not reflect processes that pertain to intracommunity social segments of various scales. It is possible to read too many causal factors into an artifact class based simply on the range of visibility of its attributes. This problem can be curtailed by considering the geographic distributions of the attributes' alternative states and the contexts of production, use, and display of the artifact class.

The Common Arrangement of Attribute Visibility Hierarchies that Reflect Multiple Processes. When a diversity of processes and constraints from the social to personal physiological levels (Table 7-2) determine the attributes of an artifact class, these causal factors commonly map to form in the following way. As the AC visibility of the attributes decreases, their causal processes shift in nature from (1) those reflecting larger social units through those reflecting smaller social units to those reflecting the person; (2) active to passive in the level of artisan control; and (3) conscious to unconscious in the degree of artisan awareness. Attributes that communicate messages often are more visible than those that reflect active or passive interaction. Tables 7-1 and 7-2 are arranged in this pattern. Many reasons for this correlation between attribute AC visibility and the nature of the causal process, as well as for exceptions to it, have been given on pages 188–199 and are elaborated for communication processes in particular on pages 201–205.

Most archaeological studies of artifact design have documented attributes of only one or two levels of visibility and do not reveal this total pattern. A few studies are more helpful. Hardin's (1977, 1983b; Friedrich 1970) descriptions of Tarascan redware utilitarian ceramics in composite allow the relationship between attribute visibility and causal process to be ascertained for attributes of a wide range of visibility (Table 7-7). As the AP visibility of attributes decreases, their causal processes shift

Table 7-7. Hierarchy of the Absolute Physical Visibility of Select Design Attributes of Tarascan Redware Utilitarian Ceramic Jars

Attribute	Absolute physical visibility level	Social unit, and inferred or known process, reflected by the attribute	Bibliographic reference
Overall shape (pitcher)	1. High	Western Tarascan (San José Patamban, Eleven Pueblos) in contrast with Eastern Tarascan; communication of regional identity, shared culture history, and/or diffusion	Hardin (1983:10)
Color and reflectivity (red background, clear glaze)	2. High	Western Tarascan (San José Patamban, Eleven Pueblos) in contrast with Eastern Tarascan; communication of regional identity, shared culture history, and/or diffusion	Hardin (1983:10)
Layout into 2 or 3 design fields	3. High	Active, expression of personal preference and/or communication of individuality	Hardin (1977: 113–114)
Optional use of vessel interior as a design field	4. High to moderate	Active, expression of personal preference and/or communication of individuality	Hardin (1977:113)
Overall perceptual texture of design fields, depending on configurations used as fills	5. High to moderate	Active, expression of personal preference and/or communication of individuality	Hardin (1977:114)
Kind of design configuration	6. Moderate	Active expression of personal preference and/or communication of individuality	Hardin (1977:114)
		Active expression or passive reflection of interacting artisans: village-wide diffused configurations; configurations distinguishing Alejos family from other artisan networks	Friedrich (1970: 336–337, Figure 4)
Organization of design fields	7. Moderate to obscure	Passive reflection of interacting artisans: Alejos family versus other artisan networks	Friedrich (1970:338)
Organization of design elements into configurations	8. Obscure	Passive reflection of interacting artisans: Alejos family versus other artisan networks	Friedrich (1970: 337–339)
Syntactic placement of isolated design elements	9. Obscure	Passive reflection of interacting artisans: Alejos family versus other artisan networks	Friedrich (1970: 337, 339)
Design element shape	10. Obscure	Passive, personal, habitual methods of manufacture	Hardin (1977: 121–124)
Paint thickness	11. Obscure	Passive, personal, habitual methods of manufacture	Hardin (1977:119)
Manner of terminating brush strokes; pressure of application of brush strokes; number of brush strokes used to make design configurations	12. Obscure	Personal motor skills	Hardin (1977: 121–123)

from (1) the active communication or passive reflection of regional differences; through (2) active, personal communication or expression; through (3) the active expression or passive reflection of interactions among individual artisans; through (4) the passive reflection of interactions among individual artisans, to (5) passive, personal conscious or unconscious habits of manufacture; and (6) passive, personal, unconscious, motor skills. Other studies that reveal similar arrangements of processes are Carr and Maslowski (Chapter 9) and Pryor and Carr (Chapter 8), and in lesser detail, studies by Redman (1977), Voss (1982), Graves (1982), Kent (1983), and Washburn (1983b).¹⁷

Message Priorities and Context in Bridging Attribute Visibility to Determining Process

In the above section, a broad spectrum of processes—both active and passive and technological through personal—are considered for their relationships to the visibility of attributes. This section focuses more specifically on the active process of communicating messages and on the concept of message priorities, which was introduced above. A number of factors that determine the priority of various kinds of messages and the visibility with which they are expressed in an artifact are discussed. Factors that are largely uniform cross-culturally are considered first, then factors that are cultural or context-specific.

Cross-Cultural Regularities

In traditional societies, active, conscious and unconscious messages and projections that pertain to social units of decreasing scale often manifest themselves respectively in attributes of decreasing AP visibility, if the messages are expressed materially. These units include panregional interaction

¹⁷Carr and Maslowski (Chapter 9:Tables 9-6, 9-7) and Pryor and Carr (Chapter 8:Tables 8-4, 8-5) document in detail the multilevel attribute visibility hierarchies of Ohio Hopewell fabrics and Pomo basketry. The correlations that they find between attribute AC visibility and the nature of causal processes reiterate the common pattern that is described in the main text.

Voss's (1982) analysis of decorative attributes of Neolithic TRB period ceramics from the northern Netherlands and Germany also follows the general pattern. The attributes that Voss studied include visible, discrete decorative attributes and obscure, continuous ones. The visible attributes are all design elements. The obscure attributes are the number of design element repetitions within design fields, the dimensions of design fields, the dimensions of some elements, and line widths. Visible attributes were widely distributed over the study region. Their distribution presumably reflects the active symbolization and communication of regional social interaction, or the active or passive interaction and rapid diffusion of visible design elements among local groups. In contrast, obscure attributes were more localized. Their relative frequencies within sites varies with the distances between sites. This suggests that the attributes reflect active or passive interaction among local groups.

Other studies also reveal the regional versus localized distributions of visible versus obscure attributes. Kent (1983:121–124) found that Pueblo III period fabrics from the Anasazi, Sinagua-Salado, and Hohokam traditions in the American Southwest all share certain visible, Gestalt–perceptual qualities that contrast them from previous Basketmaker and Pueblo I fabrics. These include two-dimensional limitless patterns rather than one-dimensional band decorative patterns; segmentation of the design field by oblique lines which give a sense of motion, rather than by horizontal and vertical lines which impart a static quality; and the freestanding positioning of design elements, rather than their absorption into large blocks of color. In contrast to these highly visible, widely distributed attributes are moderately visible to obscure ones that distinguish the three traditions. These include the kind, scale, nuances of shape, and placement of decorative motifs. The visible attribute of color also distinguishes the three traditions.

The ceramic studies of Washburn (1983b) and Graves (1982), summarized above, also document a correlation between the AC visibility of attributes and the scale of the social unit that the attributes reflect. Finally, Redman (1977:51), from his experience with American Southwest ceramics, came to a corroborating conclusion. He suggested that greater degrees of active or passive interaction between social units manifest in more detailed aspects of design (perhaps reflecting more interaction among smaller social units at smaller scales).

networks, the language group, society, smaller social segments, the community, the family/artisan network, and/or the person. For example, society or community-pertinent messages are often given priority over personal messages and are manifested in attributes of greater AP visibility.

This regularity arises from five interrelated factors. The bottom half of Figure 7-10 (p. 240), summarizes these.

Physical-Perceptual Factors. First, as discussed previously, the scale of a social unit often determines artifact viewing distances (Braun, Chapter 5). Viewing distances, in turn, set the lower limits of AP visibility that an attribute must have to effectively communicate messages. Thus, messages of larger-scale social units, which imply longer viewing distances, tend to be communicated in more visible attributes. (This argument must be qualified where social groups assemble and interact in a setting that is more restricted than their size implies. In this case, the lower limit of AP visibility that an attribute must have to communicate effectively is decreased; see p. 190.)

A second reason for the cross-cultural correlation of social unit size and attribute AP visibility is that an artifact has a limited number of attributes with high to moderate AP visibility and with good potential for communicating messages. Consequently, only certain of the many possible messages about social units that might be encoded in the artifact can be expressed in its more visible attributes. Those units and messages that are expressed in the more visible attributes are those that are most important in the normal context of artifact use. Less important units and messages are then expressed in the remaining, less visible attributes. Thus, to the extent that the importance of a social unit correlates with its size, for the ecological–evolutionary reasons given next, messages of larger social units will tend to be expressed in more visible attributes, and messages of smaller social units will tend to be left for expression in less visible attributes. Thus, upper limits are placed on the AP visibility of attributes that communicate about smaller units.

Ecological–Evolutionary Factors. A third reason for the cross-cultural regularity described above involves several interrelated ecological-evolutionary factors. In evolving human ecosystems, more inclusive social units and their messages tend to be more “important” than less inclusive units and their messages. More inclusive social units are more “important” in the sense that they are as essential to a social system’s function and survival as are units of any scale, yet they are structurally more “vulnerable” (Eisenstadt 1969:368; 1988:15–17) to external or internal systemic, disruptive stresses. As a consequence of their more problematic yet essential status, the messages of more inclusive social units are often given greater cultural value and are selected for expression in the more physically visible attributes of artifacts having ecological–adaptive functions. Less inclusive units and their messages thus are limited in their expression to the remaining, less visible attributes in such artifacts, or to artifact classes that do not have ecological–adaptive importance.

The greater vulnerability of more inclusive sociocultural units and their consequent “importance” to a social system’s survival follows from Slobodkin and Rapoport’s (1974) theory of ordered sequences of adaptation by biological systems and systems in general (see also Rappaport 1979:150–151). Specifically, for human ecosystems, if natural or social environmental risks of various kinds gradually become more intense, frequent, and/or unpredictable in a region, networks of social integration will be increasingly widened in a compensatory manner in order to level out, circumvent, or subdue those greater risks (Braun and Plog 1982). Thus, in an evolving social system, larger-scale units are closer to the “edge” of the social system’s adaptive organization of variables and to external stresses. Also, larger-scale units often represent more recent adaptations to greater levels of risk. In their immaturity, they may be structurally simpler (Simon 1965) and less well buffered from both external and internal stresses than smaller-scale, older units. In sum, in both their external stress load and structural fragility, larger-scale social units can be more vulnerable and less stable than smaller-scale social units. Some examples of this circumstance are the instability of chiefdoms (Leach 1954; Sahlin 1968:86–93; Cohen 1978:4), states (Cowgill 1988; Eisenstadt, Abitbol, and Chazan 1988:15–17; Tainter 1988), and empires (Eisenstadt, Abitbol, and Chazan 1969:24–25, 115–210, 309–360, 365–368) compared to

their constituent communities or polities, or the instability of tribal networks compared to their constituent communities and kinship groups (Fried 1968; Chagnon 1983). Note that this argument pertains to evolving social and human ecological systems rather than matured, involuted systems, where different factors can cause instability (Flannery 1972:420–421; Rappaport 1979:160–165; Tainter 1988:54–61, 91–203).

To the extent that larger-scale social units are given greater cultural value because of their problematic yet essential status, their messages will be more valued and will be expressed stylistically in the more visible attributes of artifacts with ecological–adaptive functions. This process, whereby messages are mapped to form, can involve active artisan choice, active audience selection, and/or other cultural or natural selective processes (Braun, Chapter 5). Also, the process requires that evolutionary changes be gradual enough that there is adequate time for specific design attributes to become selected and associated with particular social units.

This partial theory for why the messages of social units of decreasing scale often occur in attributes of decreasing AP visibility makes a number of assumptions. It pertains to only some ecological, evolutionary, social, and decision-making contexts, and to only some kinds of artifact classes. These assumptions and the bounds of applicability of the theory are discussed, and illustrated with specific cases of exception, on pages 204–205.

Finally, note that the theory is structural rather than functional. It does not posit that more inclusive units, such as regional interaction spheres or chiefdom bureaucracies, are more important than smaller units, such as communities or families, to the functioning and survival of a social system. Instead, the theory focuses on the external stress load, structural weakness, and vulnerability of more inclusive social units, rather than on their functional value.

A Social–Psychological Factor. A fourth reason for the cross-cultural correlation of social unit size and attribute AP visibility is the tendency for social units and their messages to be given priority over the person and personal messages, and to be expressed in more visible design attributes. This tendency arises because personal aspects of the self are always constructed and expressed through one's interaction with others *within* social roles (Goffman 1959; Stone 1962; Lindesmith, Strauss, and Denzin 1975; Voss and Young, Chapter 3). Much empirical research shows that individuals are unable to form images of their personal identities in the absence of social identities constructed through interpersonal comparison and membership in social groups (see references in Wiessner 1984:191–192).

An Empirical Factor. More inclusive social units and their messages tend to be expressed in more visible attributes, and smaller scale units and their messages in less visible attributes, for yet a fifth reason: Larger and smaller units differ in the frequencies of active and passive processes that define and operate within them and that determine an artifact's design. Active processes tend to be more common in larger social units, passive processes in smaller social units (Table 7-2). Because active processes by definition are given priority over passive processes for stylistic expression, larger social units tend to be reflected more frequently in visible attributes and smaller social units tend to be reflected more frequently in less visible ones.

Examples of the Ecological-Evolutionary Theory. Wiessner's (1983) data on contemporary Kalahari San projectile points illustrate how more inclusive social units, which lie closer to the edge of a society's adaptive organization, are given priority in their stylistic expression. Wiessner (1983:267–268, 272) found that the points of different language groups differed in attributes of very high AP visibility (point size; tip, body, and base shape), which even the “casual observer” would notice. Language groups are the social units within which environmental risks are pooled and that define the critical edge of the adaptive organization of San societies. In contrast, band clusters, which are the next most inclusive social units, were not distinguished by visible aspects of their projectile point designs except among the !Xo. Among them, a somewhat less visible attribute, body shape, distinguished

band clusters. The smallest-scale social units—bands and individuals—were not consistently distinguished by any of the visible attributes that Wiessner recorded (1983:265). We do not know whether bands and individuals expressed themselves in other, less visible projectile attributes because these are not reported by Wiessner. However, other San bands of the precontact period were distinguished by pottery motifs with moderate AP visibility and probably low AC visibility (Ridings and Sampson 1990). Additional, diachronic examples also document how more inclusive social units, which are closer to the edge of a society's adaptive organization, are given stylistic precedence.¹⁸

Assumptions of and Exceptions to the Ecological-Evolutionary Theory. The cross-cultural relationship between social group inclusiveness and attribute AP visibility is theoretically expectable from an ecological–evolutionary standpoint and is empirically common; however, the relationship is not universal. Some reasons for exceptions can be found in the assumptions and bounds of applicability of the ecological–evolutionary theory presented above.

The assumptions of the theory include the following. (1) The ecological milieu in which the relationship between attribute visibility and social unit inclusiveness holds is assumed to be one of increasing risk due to population increases and/or deterioration of the natural or social environments. Only in such contexts are more inclusive social units closer to the edge of the society's adaptive organization, subjected to high external stress loads, and relatively immature and fragile structurally. Such units are therefore vulnerable while also functionally essential and, thus, important to express symbolically. (2) Risks are assumed to be regional rather than local. Only in such contexts will social units and their messages tend to be ordered in value in a similar way throughout the society. (3) Humans are assumed to be rational decision makers who place most cultural and symbolic value on factors that are essential to their own and their system's survival, as opposed to secondary human needs and desires. (4) Humans are assumed to be omniscient decision makers who perceive the long-term effects of their short-term actions. (5) Humans are assumed to be altruistic decision makers who perceive system survival as a matter of personal survival. (6) The duration of regional stress is assumed to be long enough for the "important" messages of more inclusive, social units to be selected for material expression over the "less important" messages of smaller-scale units (Wobst 1977; Wiessner 1983). (7) The theory pertains to only those artifact classes that have an ecological, adaptive function. (8) The theory pertains to only those attributes that reflect horizontally differentiated social units. It is the evolution and widening of horizontal networks of integration that the theory addresses. Attributes that reflect different vertical social strata, and the relative visibility of attributes that reflect those strata and various horizontal social units, are beyond the domain of the theory.

Differences from these conditions may contribute to social units of any scale and their messages being more or less important, creating exceptions to the cross-cultural relationship between social group inclusiveness and attribute AP visibility. (1) In contradistinction to the first assumption, in circumstances of decreasing ecological risk and greater prosperity, when social units at the adaptive edge of organization of a system are not stressed externally, any of a wide variety of social units (the

¹⁸A well-known diachronic example of the expansion of networks of social integration in response to increasing risks, and of the corresponding expression of new and larger units of integration in design attributes and artifacts of high AP visibility, is found in the evolution of tribes in the eastern United States. During the Woodland Period in Ohio and Kentucky, regional interaction networks were broadened and formalized in response to increasing population densities and associated subsistence, territorial, and social competition. The networks were symbolized in the highly visible mounds, earthworks, and exchanged artifacts of Adena societies. With further ecological stress, interaction networks were expanded over much of the midcontinent and were expressed in the even more flamboyant mounds, earthworks, and artifacts of various Hopewellian societies (Maslowski and Carr, Chapter 9). These expressions were made in materials and attributes that are physically more visible than those that reflected local cultural traditions (Streuver 1965). Other examples of flamboyant archaeological horizon styles that symbolically expressed broader regional integration and the edge of adaptive organization of tribes or chiefdoms include the Southern Cult in the Southeastern United States, and perhaps the "Olmecoid" style in Mesoamerica (Flannery 1968) and Chavin in South America.

person, family, social segment, community, society) and their messages may come to be valued more and given stylistic expression. The reasons for the valuing of those units and messages may be adaptive, politically strategic, playful, and so on. (2) In contrast to the second assumption, short-term local stresses of an economic, social, political, or ideological nature may augment the cultural value of smaller-scale social units and encourage their stylistic expression in attributes of higher AP visibility. (3, 4) In contrast to the third and fourth assumptions, traditional or new cultural values that emphasize smaller-scale social groups and the stylistic communication of their messages may compete with ecological–adaptive issues that encourage the valuation of larger-scale social units and their stylistic expression. This may occur regardless of the adaptive advantage or disadvantage of giving stylistic priority to the messages of smaller-scale units. (5) In contradistinction to the fifth assumption, long or short-term tensions between self-serving groups within a society, and their goals and strategies, may be given priority for stylistic expression over messages pertinent to more inclusive social units and ecological–adaptive issues (Hodder 1982a:187). (6) In contrast to the sixth assumption, the duration of regional stress upon the social system may be too short for a selected stylistic response that emphasizes more inclusive units. (7) In contrast to the seventh assumption, the artifact class under study might not be of a kind, or be used and displayed in a context, that is effective for communicating the ecological–adaptive messages of larger social groups. For example, one would not expect messages pertinent to regional integration to occur on utilitarian artifacts used only in the domestic context. (8) In contrast to the eighth assumption, high social strata or positions within social units of any scale may be more valued and given more visible stylistic expression than larger-scale social units in some artifacts with ecological–adaptive functions. This exception is exemplified in “symbols of status” that represent prestige, rank, wealth, and/or power groups in attributes of greatest AP visibility (see Neitzel, Chapter 12; Morris, Chapter 13).

Example Exceptions to the Ecological-Evolutionary Theory. An example where large social units at the very adaptive organizational edge of a system are not given top priority for stylistic expression and where the messages of smaller units are emphasized is found in Yugoslavian dress during the 1930s (Wobst 1977:334–335). In Yugoslavia, at that time as today, there was a diversity of language and ethnic groups. The relationships between groups were often tense in regard to territory and religion. Nevertheless, groups had to interact because they were intermingled in patches over the country and because of strong local economic specialization and dependence on markets (Wobst 1977:330–331). In this case, it would have been ecologically adaptive if the wider regional system of economic interaction and interdependence had been most valued and given precedence in dress style over language and ethnic affiliation. Stylistic communication of economic cooperation would have made social intercourse easier among strangers traveling to markets. However, language and ethnic group affiliation, instead, were valued most and expressed in the most visible aspects of dress. The regional economic system was not symbolized in dress style at all. Thus, message priorities and their stylistic expression did not strictly follow those predicted by the theory of ordered sequences of adaptation. The predicted order did not hold because the fifth assumption of the ecological–evolutionary theory, concerning altruism, was not met in this case. (For less visible levels of the Yugoslavian clothing style hierarchy, message priorities and their stylistic communication did follow the predicted order; see p. 189.) Other examples of exceptions to the ecological–evolutionary theory are also known.¹⁹

¹⁹In other settings with different ecological or social challenges or opportunities, other kinds of less inclusive social units or vertically distinguished social strata (and their messages) might be valued and given priority for stylistic expression over more inclusive units and their messages. For example, among the prehistoric Ohio Hopewell, social differences in prestige were apparently communicated in more physically visible attributes of their mortuary fabrics, whereas ethnic affiliation was apparently communicated in less visible ones (Maslowski and Carr, Chapter 9). Another example is the loud expression of the individual in clothing and hairdress in postmodern Britain and the United States (see Footnote 6, p. 191). Many of the eight conditions that do not meet the assumptions of the theory of ordered sequences of adaptation could be reasons for these exceptions.

Message Priorities, Culture, and the Social Situation

The preceding section considered some factors that tend to be cross-culturally uniform in determining the priority of various kinds of messages and the visibility with which messages are expressed in a design hierarchy. In this section, the effects of cultural variation and social situational variation are discussed.

When an artisan makes an artifact, the messages to which he or she gives greater or lesser priority, and that are encoded in more or less visible attributes, reflect a process of compromise, balancing, and choice among alternative messages. Alternative messages are prioritized not by one set of ordering criteria, or weights, but by three. First are culturally dictated values that are uniform over the society and situationally independent in the relative priority that they give to various kinds of messages and themes. Second are culturally dictated values that vary systematically among different kinds of public social situations in the relative priority that they give to various kinds of messages. Third are artisan-determined values, preferences, motives, and strategies that vary within and among public and private social situations in the relative priority that they give to various cultural and personal messages. These three sets of criteria vary in importance among cultures or social situations within a culture. They are integrated in different ways in different cultures or social situations as the artisan designs and produces an artifact and chooses among alternative forms and their effects.

Culturally Dictated, Uniform Themes. Criteria of the first kind that determine the priority of messages and the visibility of the attributes in which they are expressed are dictated culturally rather than developed by the artisan. They also apply uniformly within a culture across all kind of social situations. They may vary between cultures. These criteria are the relative values given to various symbolic stylistic themes such as pansocietal or regional mythic–religious themes, and metaphoric information about the organization of society or the cosmos. Such themes are typically expressed across many media and genres, constituting part of the fabric or configuration of a culture (Roe, Chapter 2; Rosenthal, Chapter 10).

Some examples of such themes include the pervasive expression of mythic animistic characters and events in the surface decoration and form of South Amerindian material culture (Roe, Chapter 2); the representation of balance between the Upper, Middle, and Lower Worlds in many Southeastern Indian (Hudson 1976) and Hopewellian artifacts (Penny 1983, 1985); the San's value of "walking softly," which restricts flamboyance in artifact decoration (Wiessner 1984:201); and the material expressions of clean/dirty, male/female, life/death structural oppositions among the Nuba tribes (Hodder 1982a). In each of these cases, one or a few themes are emphasized at some obvious level throughout the oral, behavioral, and material culture of the society or region. When there are several themes, these are ordered in their importance, and expressed stylistically in artifacts and/or attributes of corresponding AP visibility, in a single way in all social situations. Long-term ecological–adaptive factors or short-term local stresses can be responsible for both the themes and the values given to them. The cultural values may or may not offer adaptive advantages.

Culturally Dictated, Situationally-Dependent Themes. Criteria of the second kind that determine the priority and visibility of messages are again values that are dictated culturally. However, their relative importance varies among public social situations of different classes and characteristics. Consequently, different messages have different but systematic priorities in different situations. MacDonald (1990:53) calls such situation-dependent messages "protocol."

Some examples of messages that are ordered in this manner include various public social identities and roles; socially recognized emotional or structural states of being such as bereaved, liminal/incorporated, or initiated/uninitiated; mythic–religious themes; and the content of socially important visions and dreams (Table 7-2; Rosenthal, Chapter 10). Some examples of the characteristics of different kinds of social situations among which the values of messages may vary are listed in

Table 7-8 (see also, Shapiro 1953:294; Wiessner 1984:227; Carr and Rosenthal 1985; Rosenthal, Chapter 10). Again, long-term ecological–adaptive factors or short-term local stresses can be responsible for both the themes and the values given to them (see previous page). The cultural values may or may not offer adaptive advantages.

In different kinds of public situations, different classes of messages will be given priority for expression in visible attributes according to the purpose of the occasion. The degree to which different kinds of messages are segregated by occasion will depend on the degree to which cultural institutions, roles, and goals are not embedded within each other.

An example where messages are systematically given different priority and visual expression in different kinds of situations by cultural dictate is found in the cloth handbags and skirts made and worn by Lue Thai women (Miller 1988). The Lue are relatively isolated rural rice farmers who live in ten villages. Lue women prepare their own thread and weave their own cloth, commonly in groups of two to four neighbors. For both the handbags and skirts of the Lue, background color is the most visible attribute. All handbags have the same background color, red, which indicates Lue ethnicity and differs from the background colors of handbags made by neighboring ethnic groups. In contrast, skirts vary systematically in their background colors according to the age of the wearer. The different messages that are given priority for expression in handbags versus skirts apparently reflect the social situations in which they are used. Handbags are used primarily outside the village in situations where it might be important to communicate ethnicity. Skirts are worn both inside and outside the village,

Table 7-8. Some Characteristics of Social Situations that Determine the Value of Messages and Their Priority for Material Expression

Characteristic	Relevant to culturally dictated messages in public situations?	Relevant to artisan-selected messages in public and private situations?
<i>Ideological and social characteristics</i>		
Sacred/profane	X	X
Liminal/incorporated	X	X
Recognized life/death spaces	X	X
<i>Social and political characteristics</i>		
Public/private		X
Civil/domestic		X
Urban/rural; center vs. periphery	X	X
Official/unofficial	X	X
Ceremonial/structured/informal	X	X
Elite/common/mixed	X	X
Strata-contrasting/strata-homogenizing	X	X
Acculturating/socially-isolating	X	X
Masculine/feminine	X	X
Gender contrasting/gender neutral/gender homogenizing	X	X
<i>Economic characteristics</i>		
Prosperous/poor		X
<i>Emotional, moral, and spiritual characteristics</i>		
Safe/risky/frightening		X
<i>Functions</i>		
Celebration, mourning, remembrance, honoring, play, justice	X	X

but are seen and would function in communication most frequently within the village, where women spend most of their time. Here, ethnicity is known and age would be more important to communicate.

Artisan-Selected, Situationally-Dependent Messages. Criteria of the third kind that determine the priority and visibility of messages are values, preferences, motives, and strategies that the artisan develops and that vary more freely within and among social situations. Consequently, different messages have different priorities both within and between different situations. Among the kinds of messages that are ordered in this manner are social and personal identities, the balance given to these, socially recognized emotional states of being, political or economic conditions or issues, and other social or personal messages that are not culturally dictated in the situation. The latter may include differentiation, affiliation, cooperation, competition, coercion, rejection, regulation, or ownership (Table 7-2). Some examples of characteristics of differing kinds of social situations among and within which the values of messages may vary are listed in Table 7-8 (see also, Shapiro 1953:294; Wiessner 1984:227; Carr and Rosenthal 1986; Rosenthal, Chapter 10).

Examples. One example where both culturally dictated and artisan-selected messages vary in their priority and attribute visibility with the social situation pertains to the contrast between sacred and profane contexts. Carr and Rosenthal (1986) and Rosenthal (Chapter 10) hypothesized and documented a systematic relationship between the sacred or profane nature of the social situation, the kinds of messages given priority in them, and the visibility of material attributes that communicate those messages. In sacred contexts, social messages are expected to be emphasized and expressed in more visible attributes. The messages may include social identity, religious beliefs that comprise social dogma as opposed to personal speculation (Malinowski 1948:237–254), mythological themes, and socially significant visions, dreams, predictions, or other psychological phenomena. Other messages such as political or economic conditions/issues, personal identities, or other personal messages are expected to be given lesser value and visibility. In contrast, in profane contexts, any of a wider range of political, economic, or personal messages might be given greater value and expressed in more visible attributes. Thus, for example, Iroquois False Face medicine masks in traditional sacred contexts were designed first by selecting physically visible features in relation to some religiously or mythologically, socially important prototype. Then, physically less-visible attributes were added or alterations were made to reflect the client's personal dream. Personal artistic license in designing visible attributes was taken more so in the profane sphere of Western market production than in the traditional, sacred sphere of mask production and use.

Another example where both culturally dictated and artisan-selected messages vary in their priority and attribute visibility with the social situation is the contrast between contexts in which group identity versus personal identity are emphasized. Most simply, this contrast relates to the respective distinction between “emblemic” versus “assertive” stylistic processes (Wiessner 1983), or “protocol” versus “panache” (MacDonald 1990) stylistic processes. In turn, emblemic/protocol processes may be of several kinds, which pertain to groups that range in scale from the society at large to smaller social segments (Table 7-1, column 7).

The balance that is given to the stylistic expression of society-wide identity, smaller social-group identities, or personal identity depends on a variety of adaptive, motivational, and strategic factors. Society-wide or smaller-group identities can be expected to be emphasized in situations of fear, intergroup competition, where possibilities for intergroup complementarity and symbiotic gains are obvious, or where intragroup cooperation in social, economic, or political adventures is needed (Barth 1969:84; Wiessner 1988:59). In contrast, personal or family identity can be expected to be emphasized in situations of interpersonal competition, affluence and opportunities for personal gain, and breakdown of the social order (Wiessner 1988:59), as in acculturation (Rosenthal, Chapter 10). (See also Barth [1969] and Royce [1982] for a broader range of factors that cause the development of ethnicity.)

Situations that lead to the communication of group versus personal identities can vary in a society daily or as trends over longer time periods. Wiessner (1984:220–225; 1988:50–61) documents this for the dress of the Eipo in New Guinea, Vietnamese housing, and San beaded headbands.²⁰

The situation-dependent nature of expression of social and personal identities is well established in the symbolic–interactionist literature of social psychology (e.g., Goffman 1959; Stone 1962; Lindesmith et al. 1975:Chapter 14; references in Wiessner 1984 and Voss and Young, Chapter 2) and certain anthropological theory on social organization (Nadel 1957; Goodenough 1965). In social psychology, the self is defined as a person's own images of and theories about his or her social and personal dimensions. Social dimensions of the self are defined by and acted out according to the expectations of the social roles one assumes while interacting with others. Personal dimensions are expressed through one's interaction with others *within* social roles. Both aspects of the self are constructed primarily through the process of comparing one's behavior with others during interaction, that is, what is termed “mirroring” (Voss and Young, Chapter 2) or “social comparison” (Wiessner 1984).

The balance that is struck between the expression of social and personal aspects of the self depends on the social situation and the cultural context. Two social–psychological reasons are key. First, the social situation defines which aspects of social structure (i.e., which “structural poses” [Gearing 1958] and social roles [Nadel 1957:30]) are manifested. These, in turn, determine which aspects of the personal and social dimensions of the self are relevant for expression and comparison with others, the balance between these, and which will be expressed in more visible design attributes. Thus, for example, in daily-life interactions, the !Kung San compare the style of headbands worn by each other most commonly among kindred and affinal relations. Comparison is made especially among those with whom they interact most frequently, for it is these relations that structure everyday living arrangements and activities (Wiessner 1984:204–206).

The second way in which the social situation and cultural context determine the balance of expression of the social and personal selves is by defining the degree to which roles are ambiguous. Role ambiguity, in turn, governs how much and which aspects of the personal self it is socially appropriate to expose. Knowledgeable of the allowed latitude, a person manages and conveys impressions according to personal interests, be they ego or altruistically focused. Certain amounts and aspects of the personal self are revealed. The symbolic interactionist perspective in anthropology takes a similar view of the situationally dependent creation and negotiation of the self, behavior, and culture.

²⁰Wiessner (1988:59–60) documents daily variation in the expression of personal versus social identities in the visible attributes of dress among the Eipo of New Guinea. As one moves from everyday life to intravillage feasts to finally intervalley feasts where the communication of group unity promotes exchange and discourages war, greater attention is given in dress to expressing social identity. Dress becomes more homogeneous within valley groups. Likewise, among the New Guinea Maring, male body ornamentation was elaborate, colorful, and “idiosyncratic” during ceremonial victory feasts, which were attended by allies and unmarried females who men sought to attract as mates. During formal warfare, when the communication of social solidarity was essential, male body ornamentation was more homogeneous, being restricted to black and white markings (Lowman and Alland 1973:15,20).

Situation-dependent changes in the balance of expression of social and personal identities can also be seen in longer time trends. For example, in northern Vietnam, as family economic initiative and income increased during the late 1970s and early 1980s, and as cooperation among households became less necessary, house decoration became more diverse and elaborate, emphasizing household individuality (Wiessner 1988:61). Also, among the Tsumkwe San, the recent aggregation of bands into larger government communities during much of the year has led to increased interpersonal competition, a need for greater personal differentiation, the breakdown of traditional social restraints on personal expression, and new economic opportunities for men and women. These factors have led to greater individuality in the styles of Tsumkwe San headbands. Headbands are a primary material means among the San for personal expression and interpersonal comparison (Wiessner 1984:220–225).

In the anthropology of social organization, Goodenough (1965:6) notes that the social and personal “identities” that a person selects depend on the social setting and the other persons that are present for interaction. He defines the “social persona” as that composite of the several identities that are thought appropriate in a given context (Goodenough 1965:7). Also, the rights and duties, or “statuses,” that are attached to an identity depend on the identity with whom one is interacting (Goodenough 1965:4). Similarly, Nadel (1957:23–41) defines the social “role” as a bundle of social positions and their rights and duties, which are enacted sequentially in different contexts. Roles come into existence with various cues, or may “unfold” and transform through time as a context evolves.²¹ Thus, social psychology and anthropology provide a firm theoretical foundation for expecting the stylistic expression of social and personal identities and their balance to shift with the social situation.

In summary, when an artisan makes an artifact, the relative importance that the artisan gives consciously or unconsciously to various messages, and the AP visibility of the attributes in which those messages are expressed, depend on three different sets of ordering criteria. The criteria include values and themes that are culturally dictated in a uniform or situation-dependent manner, as well as personal values, preferences, motives, and strategies that are situation-dependent. These three different kinds of ordering criteria, in turn, pertain to somewhat different classes of messages. The manner in which these different kinds of criteria are integrated so as to produce a single ordering of messages and a single mapping of messages to attributes varies with the culture and its general ecological–adaptive milieu. It also varies social-situationally with the cultural, ecological–adaptive, and motivational characteristics of the immediate contexts of artifact production, use, and display.

This way in which messages are ordered in importance and expressed materially is much more complex than that proposed by Wiessner (1984). She considers only the third kind of ordering criterion, which pertains to situationally varying messages that are selected by the artisan. She does not consider culturally dictated, constant messages or culturally dictated, situationally varying messages.

Finally, it is important to remember that despite the wide range of factors that may determine messages, message priorities, and the AP visibility of the attributes in which messages are expressed, there exists a cross-cultural regularity among them. Messages of social units of decreasing scale tend to be reflected in attributes of decreasing AP visibility in traditional societies, and for clear reasons (pp. 201–203).

The Concept of Message Priorities Extended to Multiple Media

Throughout the preceding section, the focus has been on the priority given to expressing various messages within single kinds of artifacts of one medium. Several factors were found to determine the order of importance of messages and the particular attributes in which they are expressed. These factors include the physical and contextual visibility of the attributes; the nature of the social situation(s) in which the artifact class is used; and the three ordering criteria of culturally dictated values that are uniform over a society, culturally dictated values that vary situationally, and artisan determined values, preferences, motives, and strategies. When artifacts of multiple classes of several media are considered, analogous factors determine the priority given to various messages and the particular classes through which they are expressed.

An example of a culturally dictated, uniform theme that was valued and applied broadly across many kinds of social situations and many visible media and artifact classes is the Baroque—which encompassed elaboration, complexity, contrasting effects, and sinuosity—in 17th century Europe. The Baroque was carried out with striking similarity and great priority in architecture, sculpture, painting, drawing, furniture and other household items, and gardening. Beyond these formal media, it

²¹This contextual, interactionist perspective differs from the more static social organizational models of Linton (1936:113–114), Merton (1957:368–370), and Service (1971:11), and common archaeological thought derived from Service. These models associate a constant array of rights, duties, and behaviors with a social “position.”

was also expressed in the music, poetry, drama, and philosophy and science of the time (Shapiro 1953:295).

Several clear examples are given in this book and elsewhere of different media being used in different social situations and varying in the messages imbued in them according to situation-specific values. Morris (Chapter 13) contrasts the contexts of use, the expressive roles, and the messages of architecture, ceramics, textiles, and metals among the Inka. Neitzel (Chapter 12) does the same for architecture, a class of ceramics, and turquoise from the Chaco system of the American Southwest. Shapiro (1953:295) notes,

We look in vain in England for a style of painting that corresponds to Elizabethan poetry and drama; just as in Russia in the nineteenth century there was no true parallel in painting to the great movement in literature. In these instances we recognize that the various arts have different roles in the culture and social life of the time and express in their content as well as style different interests and values.

Although the concept of message priorities and their relationship to material visibility and contexts of use can be extended in application from the multiple attributes of an artifact to multiple artifact classes, there is a fundamental difference between these two circumstances. In the case of a single artifact class, the number of highly visible attributes that are effective for bearing messages is limited, and messages (if there are several) must usually be ranked in their importance for expression in more or less visible attributes. In the case of multiple artifact classes, the number of classes that are highly visible need not be as restrictive, messages need not be ranked as rigidly, and simultaneous communication of many messages in multiple, highly visible classes is possible. The nature of the social situation, moreso than artifactual, physical-formal limitations on expressing messages, may lead to a prioritizing of messages for expression.

Constrained Indeterminacy in the Relationship between Attribute Visibility and Determining Process

Many factors structure the relationship between the AC visibility of an attribute and the processes or constraints that it reflects. Some of these factors can be summarized by relating them to three basic dimensions of the characteristics of the processes and constraints (Figure 7-3). The first dimension is the *scale* of the social unit within which the process operates. This may determine viewing distances and the relative ecological–evolutionary based cultural value of the social unit and its messages. Second is the active or passive degree of *control* that the artisan has over the process. Third is the conscious or unconscious level of *awareness* that the artisan has of the process. Thus, empirically one finds that processes that pertain to larger units, are active, and/or are conscious tend to be reflected in attributes with greater AC visibility. Processes that pertain to smaller units that are passive and/or that are unconscious tend to be reflected in less visible attributes (see pp. 189–190, 192, 199–205). Tables 7-1 and 7-2 model this pattern.

However, this pattern is only a cross-cultural tendency. There is no single ordering of processes and constraints that universally maps to attributes of decreasing AP or AC visibility. Nor is there any single algorithm or argument for combining the three dimensions of the characteristics of processes and constraints so as to define such an ordering.

This indeterminacy between attribute visibility and process arises from several circumstances. First is the wide and overlapping ranges of attribute AP visibility in which some processes can manifest themselves (Table 7-2). Second, indeterminacy results from a number of context-specific factors that cause variation in the relative importance of sociocultural units and their messages. These factors include cultural values and configurations that differ from society to society. They also include the cultural, ecological-adaptive, and motivational characteristics of the social situation of artifact production, use, and display within a society, which in turn determine culturally dictated, situation-

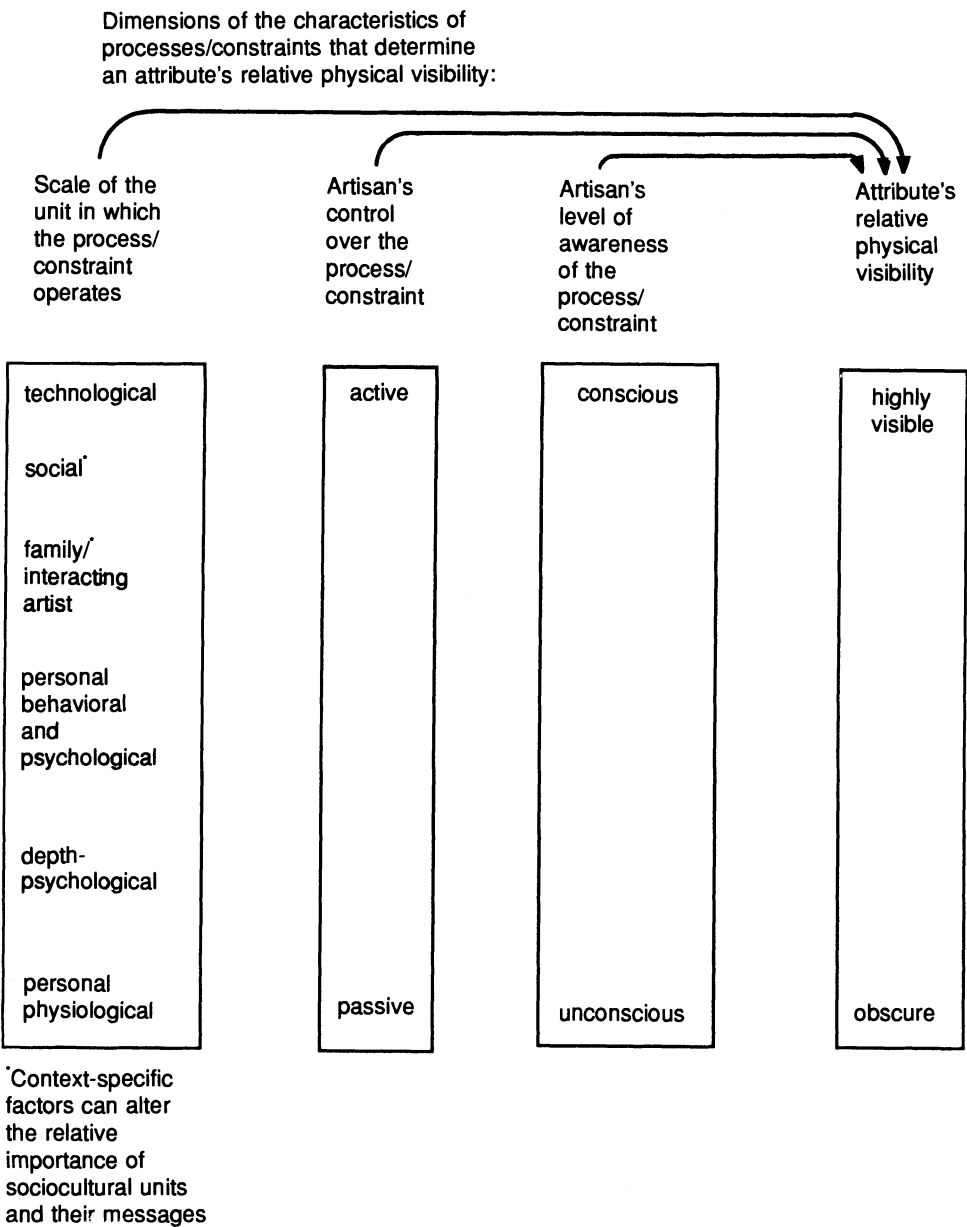


Figure 7-3. The processes and constraints that determine the relative physical visibility of the attribute have three dimensions of variation.

dependent values and personal values, preferences, motives, and strategies of the artisan. Third, indeterminacy results from the varying character of contexts of artifact use and display. This variation affects the distance and/or frequency of artifact viewing. Social events can be structured in varying ways that change artifact viewing distances. Socially closed contexts of use decrease the range of viewers to which an artifact might otherwise be visible and/or the frequency of viewing. Group fissioning and systematic destruction of prototypes have the same effect. Fourth, some contexts of artifact production or media are culturally defined as protected realms. There, the artisan can express his or her creativity in visible attributes normally restricted to traditional, socially dictated forms. Fifth, highly visible attributes whose production depends technologically on obscure attributes may not reflect the active processes or larger-scale social units that their high visibility would normally allow. Sixth, indeterminacy between attribute visibility and process can result from the alignment of communication and interaction processes and the expression of both in the same, visible attribute(s).

In sum, the relationship between attribute visibility and process is best characterized as “constrained indeterminacy” (Carr and Rosenthal 1986). It is neither the universal relationship once modeled by Wobst (1977), nor the culturally and historically particularistic phenomenon concluded by Hodder (Hodder 1982b:183).

Implications of the Bridging Propositions to Current Theoretical Debates on Style

The bridging propositions presented above have direct implications for two fundamental debates in archaeology. One debate concerns the relative truth of the information exchange versus the social interaction theories of style. The second pertains to the kinds of attributes that are appropriate for delimiting societies and social segments.

The Information Exchange and Social Interaction Theories Revisited

Historically, the information exchange and social interaction theories were characterized as competing frameworks that each pertain to an undefined, similar range of design attributes (Plog 1980; Braun and Plog 1982; Carr, Chapter 6). However, it is possible to reconcile and integrate the two theories by defining different boundary conditions and analytical roles for them (Voss 1980).

The two theories complement each other by pertaining to different ranges of attributes at different levels of an artifact’s design hierarchy. Attributes at different hierarchical levels vary in their AP visibility, in the ranges of processes and social units that they thus can reflect and, consequently, in the theories that are relevant to them in addressing those processes. Specifically, the information exchange theory applies to design attributes of high to moderate AP visibility, and to attributes of lower AP visibility but high AC visibility. Only these attributes have consistent potential for communicating social and personal messages. Current social and personal conditions, issues, or needs that are important to communicate in the current context of production, use, and display of the artifact are more commonly reflected in these attributes. In contrast, the social interaction theory applies to attributes of poor AP and AC visibility, or to visible attributes that depend technologically on obscure ones. Only these attributes do not diffuse without close interaction, either because they or the attributes upon which they depend technologically are not easily perceived. Traditional aspects of artifact design that are learned when a craft is taught to an artisan (Roe 1980), rather than conditions in the current context of artifact production and use, are more commonly reflected in these attributes.

These boundary conditions on the two theories must be qualified, however, in two ways. First, there are processes and constraints beyond those addressed by the information exchange and social interaction theories that also affect the attributes to which these theories pertain. Not all attributes of high AP and/or AC visibility need communicate messages. For instance, some may reflect technology

alone, the passive sharing of culture history, or the active aspects of enculturation found in student–teacher negotiations (Table 7-2). Similarly, not all attributes of poor AP and AC visibility need reflect social interaction. For example, some may reflect passive personal preferences, manufacturing habits, or motor skills. These alternative causal factors can often be recognized by considering the geographic expanse and form of the attribute's spatial distribution and other spatial and nonspatial contextual information (see the Geographic Distribution Hierarchy, below).

A second way in which the boundary conditions on the two theories must be qualified is that the theories can overlap in the attributes to which they pertain. This is the case if the AP visibility rather than AC visibility of attributes is analyzed. Attributes of poor AP visibility can not only reflect social interaction, but also communicate messages in social situations where distances of interaction among persons and artifact viewing distances are small (see examples, p. 190). The two theories also overlap in the attributes that are relevant to them when interaction and communication processes come into alignment. This occurs when interactions are important economically, politically, socially, and/or ecologically and come to be actively recognized, symbolized, and communicated in attributes of high AP or AC visibility (see examples, p. 197).

Design Indicators of Social Groups

A basic task in archaeology is reconstructing the geographic and temporal bounds of societies and smaller, self-aware social groups. Archaeologists have endlessly debated the appropriateness of different kinds of attributes for this purpose in the contexts of both traditional artifact typology (c.f. Binford 1965; Dunnell 1971; Rouse 1960; Taylor 1948; Whallon and Brown 1982) and stylistic studies of interaction (e.g., Plog 1982 versus Washburn and Ahlstrom 1982).

The bridging arguments presented above make it clear why no single material criterion is useful cross-culturally for characterizing the kinds of attributes that delimit a society or other social groups. Specifically, a social group—be it a whole society, a community, or some other social segment—may be defined and delimited by any of several kinds of processes. Table 7-2 lists these processes. In turn, the AP visibility of design attributes that reflect each process and/or all of the processes that define a social group may vary widely. Table 7-9 shows this variation. Table 7-9 also shows one reason why the processes that define a social group vary in the AP visibility of the attributes that reflect those processes. The processes differ in their character: whether they (1) are active or passive; (2) are conscious or unconscious; or (3) pertain to between-group or within-group dynamics. Other reasons for variation in the AP visibility of attributes that reflect group-defining processes include the size of the group and most of the six circumstances leading to indeterminacy in the relationship between attribute visibility and causal process (pp. 211–213).

Especially relevant to current archaeological literature is whether the process that defines a social group stylistically operates within the group or between groups. Considering active processes, alone, artifact styles can vary among groups as a result of three kinds of processes. First is the active symbolization of group boundaries to express complementarity, competition, etc. (Barth 1969). Second is the active symbolization of group boundaries as part of the competitive strategies of subgroups within them (Hodder 1982a:75–86). Third is the active expression of within-group cooperation. Any one or more of these processes can be involved in the creation of ethnic identity (Royce 1982), and any one or more may have stylistic expressions that can help the archaeologist reconstruct social groups. However, which of these processes are expressed materially can vary from society to society, social segment to social segment, and by artifact class (Hodder 1982a:35). In turn, the material attributes that can reflect these processes differ in the ranges of their AP visibility. Expression of within-group cooperation can be achieved with attributes of moderate AP visibility when artifact viewing distances are small. In contrast, symboling of group boundaries often involves larger viewing distances and more highly visible attributes (Table 7-9).

Table 7-9. Kinds of Processes that May Define and Delimit a Society or Social Group, and the Absolute Physical Visibility Required of Design Attributes to Reflect Those Processes

DIMENSIONS 2 AND 3	DIMENSION 1	
	Between-group processes	Within-group processes
	Active, conscious expression involved during attribute choice and artifact design	Process: symboling group affiliation to express social boundaries; communicating group proscriptions Visibility: attribute must be highly to moderately visible so that it can be seen from a distance
	Active, unconscious expression involved during attribute choice and artifact design	Processes: symboling group affiliation to express within-group cooperation and solidarity; communicating other pansociety messages Visibility: attribute need not be highly to moderately visible as it need not be seen from a distance, depending on the context Process: psychological projection of pansociety, metaphoric information about the organization of society or the cosmos, or depth-psychological, archetypal themes about relationships Visibility: obscure, in the form of complex, relational attributes Process: psychological projection of archetypal personages in the form of pansociety mythological figures Visibility: attribute need not be highly to moderately visible as it need not be seen from a distance, depending on the context
	Passive, unconscious, or conscious use of attributes following traditional norms	Process: enculturation of traditional craft norms; shared culture or group history of interactions and influences; casual learning and diffusion through contact between groups Visibility: obscure to high

Thus, it is fruitless to look for any single, cross-culturally uniform, material criterion that defines the kinds of design attributes that delimit societies or social segments. Relevant attribute selections must be made on a case-by-case basis, in reference to the particular processes that probably operated or did operate in that context (see pp. 236–246).

THE DECISION HIERARCHY

A hierarchy of design attributes can be established on the basis of not only their AP and AC visibility, but also two other covarying attribute characteristics. First is the relative order of the attributes in a hierarchy of manufacturing decisions involved in planning the design and attributes

of the artifact. Second is the relative order of the attributes in a sequence of production steps involved in the artifact's manufacture. These characteristics serve to substantiate, elaborate on, and/or refine the ordering of attributes by their AP visibility. In this way, they strengthen the linking of attributes to their determining processes and constraints.

This section begins by defining the concept and nature of a decision hierarchy. Several factors that are essential to the nature of decision hierarchies and that determine attribute ordering are considered. These are technological and logical-formal constraints, syntactic and semantic constraints, and message priorities. Next, the relationship between the decision order of an artifact's attributes and the behavioral and other processes that they may reflect is described. Then, decision hierarchies of various structures are distinguished. The distinctions have implications for the selection of relevant design attributes for analysis. Finally, decision hierarchies are distinguished from design grammars. These two kinds of structures can be similar formally, but differ in their organizational basis, content, and goals.

The Decision Hierarchy Defined

A manufacturing decision hierarchy is a sequence of decisions or sets of decisions about an artifact's attributes that must be made, one after another, in the process of *planning* an artifact's design. Manufacturing decisions are distinct from the production steps taken to realize the artifact's attributes and design. Manufacturing decisions may be made (1) in a very formal manner entirely before the production of the artifact; (2) coeval with the production of attributes to which the decisions pertain, as a part of a spontaneous creative process; or (3) anytime between these two extremes (e.g., Roe 1979:207; Hardin 1979).

The order in which decisions are made reflects the logical relationships of dependence of later decisions upon earlier ones. Specifically, some decisions can be made only after other decisions have been made and serve as a "frame" for them. At the same time, those earlier decisions that do serve as a framework for the expression of later ones also "constrain" the range of alternative attributes that are possible, relevant, or appropriate in later decisions.

Framing constraints are of four kinds. Most basic are the *technological* constraints and the *logical-formal* constraints that earlier decisions place upon later ones. Only some technological procedures and materials are possible in the context of other technological givens. Thus, earlier decisions about materials and procedures constrain later ones. Similarly, only some alternative forms are logically possible in the context of other formal givens. Thus, early decisions about form constrain later ones.

For example, the quality of chert used to make a projectile *technologically* limits or permits the fineness with which its edges can be pressure-flaked. Early decisions about the kind of chert to be used *technologically* constrain later ones about pressure flaking. Similarly, whether a projectile has barbs *logically* and *formally* constrains whether the shape of barbs is relevant to consider. Early decisions about the general form of the projectile *logically* determine the relevance of later ones about the details of its form.

The third and fourth kinds of framing constraints are the *syntactic* and *semantic* constraints that earlier decisions about the messages, meanings, forms, and symbols to be encoded in an artifact place upon later such decisions. Only some messages, meanings, forms, and symbols are syntactically and semantically appropriate in the context of others already given.

Examples of syntactic constraints include surface grammatical rules for decorating pottery, such as the design grammars of Tarascan (Friedrich 1970:335), Lapita, and Ban Chiang (Hardin 1983a:311–312) painted pottery. In these cases, earlier decisions about design field layout constrain later decisions about the kind or organization of motifs that it is appropriate to paint in those fields. Examples of semantic constraints are commonly found in iconographic representations of cosmology. Cross-culturally, cosmologies often place value on separating, balancing, or integrating in this life the

categories of plants, animals, and other things that are associated mythologically with different cosmological realms, such as the earth, sky, or waters. In such cultures, earlier decisions to represent certain categories from certain realms on an artifact will constrain later decisions about what other categories from other realms are appropriate to also represent. The value that the Indians of the southeastern United States placed on separating and balancing things associated with the Upper and Lower Worlds in all aspects of life, including their art (Hudson 1976:136–148,173), illustrates this semantic constraint. Similar values may be expressed in the animal and material associations rendered in prehistoric Ohio Hopewell iconography (Penny 1983, 1985).

Of the four kinds of framing constraints, technological and logical–formal ones are more fundamental than syntactic and semantic ones. The messages, meanings, and symbols that may be encoded in an artifact are always played out in a material realm and embedded within technological (Sackett 1985) and logical-formal possibilities.

A simple example of a decision hierarchy, the framing relationships and constraints that structure it, and the resultant ordering of attributes can be found in the designing of an item of clothing (Table 7-10, Figure 7-4). Suppose a woman wishes to make an item of clothing. She has a series of decisions to make about the item’s attributes. Some decisions must logically be made before others. Should she make a dress or a pair of slacks? She decides upon a dress. How formal should the dress be? She decides to make it formal. To manifest the formality of the dress, what should be its color, perceptual texture and material, and general shape, including its length, fit, and neckline height? She decides, among these characteristics, that the neckline will be high. Should the neckline be decorated with lace or stitched plain? She decides on lace. What type of lace should she use—bold or fine patterned? She decides on fine. Should the lace be attached with a muted, simple stitch or a bolder, angular stitch? She decides on muted, to allow the lace to speak for itself.

Earlier decisions in this hierarchy serve as a frame for later ones. Earlier decisions determine what attributes and attribute states are technologically possible, logically and formally relevant, or syntactically and culturally appropriate in later decisions. For example, the woman’s decision to make a dress might depend on a technological, raw material limitation—the amount of cloth that she has available. Her decision about whether she should make a formal or informal dress is logically relevant only if she has first decided to make a dress, as opposed to slacks or some other kind of clothing. Her decisions about the color, texture, material, and general shape of the dress might depend syntactically on her choice to make a formal dress and cultural rules about the required characteristics of formal dresses. Her decision to add lace to the neckline might depend syntactically on her choice to make the neckline high and cultural rules about the decoration of high neckline, formal dresses. Her decision

Table 7-10. An Example of a Hierarchy of Design Attributes Arranged by Their Visibility and Decision Level

Design attribute	Attribute state	Relative physical visibility	Decision level
Overall form	Dress, slacks, etc.	High	1
Formality of the dress	Formal, informal	Gestalt quality	High
Dress color	Various colors	High	3
Perceptual texture and material	Various textures and materials	High	3
General shape of the dress, including neckline height	High, low	Moderate	3
Lace on neckline	Present, absent	Moderate	4
Pattern of lace	Bold, fine	Poor	5
Stitching used to attach lace	Bold, muted	Poor	6

Attribute:

Overall form

Formality of the dress

Color, perceptual texture and material, general shape

Lace on neckline

Pattern of lace

Kind of stitching used to attach lace

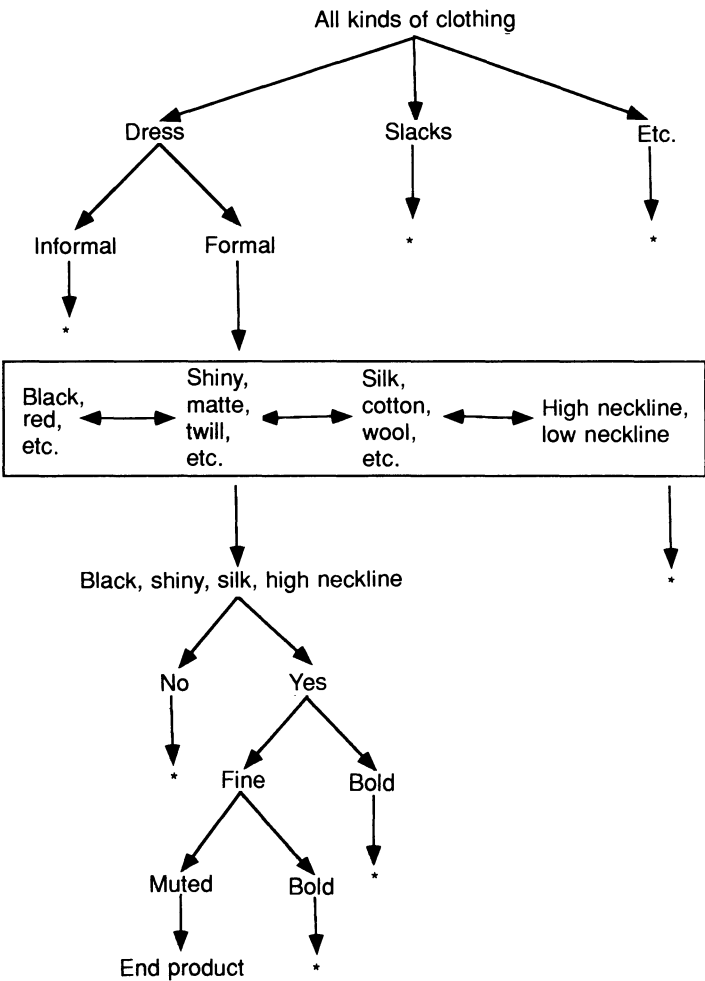


Figure 7-4. A decision tree for a dress. Asterisks (*) indicate additional, analogous decision pathways which lead to decisions about the same or similar attribute states but which are not shown here. Boxed attribute states are those about which decisions can be made “simultaneously,” in this case in a “coordinated” manner.

about the pattern of lace to be used is logically and formally relevant only if she has already decided to decorate the neckline with lace. Finally, her decision about the fineness of stitch for attaching the lace might depend syntactically on the fineness of the pattern of lace that she previously chose and on cultural rules about coordinating kinds of lace and stitching. Thus, decisions are ordered and a decision hierarchy is structured by the framing relationships and constraints among the decisions.

All of these decisions and the framing relationships and constraints that structure them can be represented graphically by a decision tree (Figure 7-4). Other structures are also possible (see pp. 224–227).

The process of ordering manufacturing decisions into a hierarchy according to their framing

relationships and constraints, as just described, is applicable to all media.²² Pryor and Carr (Chapter 8) and Carr and Maslowski (Chapter 9) illustrate this process for basketry, fabrics, and cordage.

The General Nature of Arrangement of the Decision Hierarchy

Attributes that are ordered according to their position in a decision hierarchy tend to follow a general pattern. Early decisions usually pertain to attributes that define the gross structure, composition, layout, or outline of an item. These attributes, being larger, tend to have greater AP visibility. Later decisions usually pertain to the finer details of design. These, being smaller, tend to be less visible. This pattern often occurs because, by definition, earlier decisions serve as the frame for and constrain later decisions.

Thus, the order of design attributes that is defined by their position in a manufacturing decision hierarchy tends to correlate with their order as defined by their AP and RP visibility. The clothing example in Table 7-10 illustrates this. The first decision, whether the item of clothing is to be a dress or slacks, pertains to its gross outline. This attribute is quite visible. Later decisions concern the finer and finer details of neckline height, lace decoration, and the stitching used to attach the lace. These attributes are decreasingly visible. Other examples of covariation between the AP or RP visibility of design attributes and their position in a decision hierarchy are provided for basketry, weaving, and cordage by Pryor and Carr (Chapter 8) and Carr and Maslowski (Chapter 9).

The correlation between the decision order of attributes and their AP or RP visibility is not perfect, however. For example, an attribute of a lower decision order may have a greater AP visibility than an attribute of higher decision order. Such circumstances can arise because the AP and RP visibility of an attribute are determined by more than its size (Table 7-5).

Simultaneous, Independent Decisions and Determinants of Their Order

When decisions about attributes are made sequentially, as has been assumed above, earlier decisions serve as a frame for and constrain later ones. Technological, formal, syntactic, and semantic constraints determine the order of decisions.

In many media, however, some decisions about some attributes are made in sets. Multiple decisions, rather than a single decision, are made at one decision level. These decisions may be made independent of each other, or to compensate or coordinate with each other, in any order, that is, "simultaneously" (see p. 225).

Simultaneous decisions within a set do not serve as a frame for each other or constrain each other. Factors other than the four kinds of framing constraints determine the order of decisions. When at least some of the decisions of a set pertain to attributes that actively communicate messages, the order of decisions is determined by the priority of the messages and the suitability of the attributes for expressing those messages. Decisions are made first about those attributes that are best suited in their nature and/or AP visibility to express messages of highest priority (Figure 7-5). Subsequent decisions

²²Other examples of the process of ordering manufacturing decisions according to their framing relationships and constraints are as follows. In basketry, once one has decided the shape and weave/visual texture of a basket, one has technologically constrained the range of designs that can be woven into it (Pryor and Carr, Chapter 8:Figure 8-3). The same is true in the weaving of fabrics (Kent 1983:120; Carr and Maslowski, Chapter 9:Figure 9-3). In pastel drawing and watercolor painting, once one has placed a ground color or wash over an area, the hues of all objects subsequently drawn or painted over it are constrained technologically to a more limited range. In landscape painting, once one has drawn a horizon line, one has implicitly constrained, in accordance with the laws of linear perspective, the shapes and sizes that can be taken by objects that fill the sky and earth spaces. The laws of linear perspective are syntactic constraints that pertain to early Renaissance and later Western cultural heritage, rather than technological constraints.

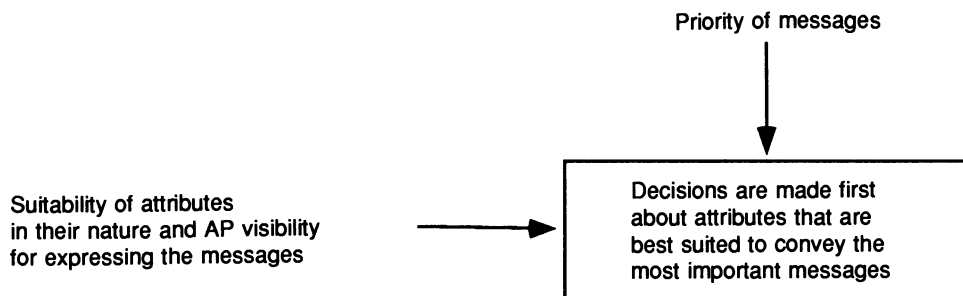


Figure 7-5. The determinants of decision order when decisions are made simultaneously in sets and independently of each other, and when attributes communicate messages.

are made about attributes that are useful or available for expressing lower priority messages, or that do not express messages.

The example of designing a dress (Table 7-10, Figure 7-4) can be used heuristically to illustrate these points. The decisions about dress color, perceptual texture, material, and general dress shape all occur at the same decision level. This set of decisions works out the implications of the previous decision to make a formal dress. All of the decisions in the set are made independently of each other. The decisions can be made in any order, or “simultaneously.” They do not constrain each other technologically, formally, syntactically, or semantically, although they are all similarly constrained syntactically by the earlier decision to sew a formal dress.

However, the different attributes to which the decisions in the set pertain might actively communicate different messages. Dress shape might communicate the general formality of the situation in which the dress is to be worn and the woman’s high social position, in general. Dress texture and material richness might communicate the woman’s more specific economic status. Color might express the woman’s personal preference and personality. In turn, these messages might differ in their importance for expression according to cultural values and perhaps the particular social context. If social position were more important to communicate than personality, then the first decisions to be made in the set would concern dress shape, texture, and material. Dress color would be decided secondarily. This decision order would become important if the decisions in the set were made in a simultaneous, dependent, coordinating, or compensating manner (although this is not so in this example). If this were the situation, the expression of less important messages in later-selected attributes might be compromised, formally, relative to the expression of more important messages in earlier-selected attributes (see also pp. 223–224).

In instances where decisions are made in sets and their order depends on communication processes that the archaeologist has yet to reconstruct, decision order is not a useful, independent criterion for ordering attributes into a hierarchy and for assigning processual meanings to attributes. It is important that researchers understand this limitation to the utility of decision hierarchies. It is also essential that researchers not force all manufacturing decisions into a sequential format.

Qualifications in the Definition and Arrangement of the Decision Hierarchy

There are several nuances to the concept of a decision hierarchy that require clarification for its appropriate application in style analyses. These include the distinction of decisions, on the one hand, from attributes, unconscious projections, and inspirations, on the other.

Decisions versus Attributes. In contradistinction to Plog (1980:41), decisions are not “equated” with attributes and a decision hierarchy is not equivalent to an attribute hierarchy as defined here. Decisions *pertain* to attributes; the construction of a decision hierarchy results in an ordering of attributes, from those to which earlier decisions pertain to those to which later ones pertain (e.g., Table 7-10). Moreover, the order of an attribute in a decision hierarchy is only one of its three *characteristics* that determines its position in an attribute hierarchy as defined here (Table 7-1). The other two characteristics are the attribute’s visibility and production step order. These distinctions are important to maintain because all three characteristics of an attribute, not simply its order in a decision hierarchy, determine the range of processes that map to it.

Conscious and Unconscious Decisions. The term “decision” is used in current archaeological literature (Braun 1977:129; Redman 1977:46; Plog 1980:41–42; Braun and Plog 1982:511) to refer to a choice that an artisan comes to make when producing a piece of art or other artifacts. The term literally denotes a decisive act, based on a conscious, rational process (Limp and Carr 1985). However, the choice processes involved in the creation of an artifact are usually of a broader range of kinds. They include conscious choices, inspirations that remain unconscious projections through the creative process, and inspirations that rise to the semiconscious, preverbal level of the “practical conscious” (Pryor 1985a).²³ In this chapter, the term “decision” is used in an expansive manner to include all of these kinds of selection processes.

Decisions and Initial Inspirations. As decisions of a kind, the creative inspirations that may initially lead an artist to plan and produce a piece of art have a place analytically with other unconscious and conscious decisions in a design hierarchy. However, when structuring decisions into a hierarchy, the analyst should not confuse the sequence of the inspirations in the initial creative process with their order in the decision hierarchy.

Specifically, decisions in a decision hierarchy are ordered according to the technological, formal, syntactic, and semantic constraints that they impose on each other. In contrast, the initial creative inspirations that lead an artist to plan and produce a piece of art may belong to any level of the decision hierarchy of which the inspirations will become a part and which is yet to be realized. An artist may be inspired to make a piece of art by any of its attributes and the potentials that they hold for creative expression. Thus, the creative process is not necessarily begun with the most fundamental decisions of a decision hierarchy, which pertain to layout, outline, or other physically visible attributes.

In this sense, the terms “early” decisions and “later” decisions, which I have used heuristically above to introduce the concept of a decision hierarchy, are somewhat misleading. The order of decisions in a decision hierarchy is determined structurally and contextually rather than temporally. Thus, the terms, “first-order” decisions and “later-order” decisions, and “higher-order” decisions and “lower-order” decisions, are more appropriate when discussing a decision hierarchy. These are used henceforth.

Two examples of the distinction between the structural order of decisions in a decision hierarchy and the temporal order of inspirations and choices are the following. Suppose a painter is inspired to capture a certain twist in the branches of a tree, or a potter is inspired to create a certain vertically oriented decorative motif on a pot. Both of these are finer-scale design attributes. Once inspired,

²³Some attributes of an artifact are chosen entirely consciously, based on an assessment of the logical possibilities for achieving some effect. For example, to greatly emphasize an orange in a still life, an artist might consciously assess the background colors that would be more or less effective for this, using the rules of the color wheel. However, choices are also arrived at through inspiration from the unconscious. The inspirations may remain entirely unconscious to the artisan through the creative and production processes, in which case they are psychologically termed “projections.” Unconscious inspirations may also become conscious to various degrees as the artisan plays with these choices and their ramifications during further planning or production.

however, the artist must then plan the artifact's design in a more orderly manner. In particular, decisions must be made about grosser attributes, which will provide a frame for the finer one that initially inspired work. The artist must consider how various alternative gross attributes might or might not technologically or otherwise allow the finer, inspired attribute to become a part of the artifact's decision path and to be realized. Thus, the painter who is inspired to capture the twist of tree branches must consider whether he or she should paint one tree or a forest, the density and size of the trees, and the direction of lighting. These are all attributes of composition that are more visible, that pertain to first-order decisions in a decision hierarchy, and that may or may not allow the finer-scale, inspired attribute of branch twisting to be effectively achieved. Similarly, the potter who is inspired to create a vertical motif must consider the orientation of the pot's overall form, the orientation of the decorative field in which the motif will occur, and how these will or will not accentuate the motif's form. Again, these additional attributes all concern the composition of the piece, are visible, and pertain to first-order decisions that determine whether the finer-scale, inspired motif can be realized. Thus, initial inspirations are not necessarily the first-order decisions in a manufacturing decision hierarchy. Initial inspirations need not pertain to attributes that define the overall form or structure of an artifact and that have the greatest AP visibility.

A similar situation holds when an artist is in the midst of planning or producing a piece of art and is focusing on attributes of a restricted range of decision levels. Creative inspirations about attributes at any levels in this range may arise. However, once inspired, the artist must then step back and plan the design of this aspect of the artifact such that decisions about grosser attributes lead to the inspired attribute. The artist may also have to rework decisions made much earlier, which pertain to grosser attributes beyond the range of original focus.

Finally, note that both inspiration and planning can occur before or during production. Also, planning can be part of a playing process during production (Roe, Chapter 2), which facilitates further inspirations. The creative process is usually not a linear one.

These complexities in the creative process differ from the simplified view of it presented by Hardin (1979:92). Hardin envisioned the creative process as a sequence of production steps, with creative, "problem solving" and choice at each step. The possibility of forethought and inspiration prior to the manufacture of the artifact or some aspect of it are missing from Hardin's model. There are historical reasons for this.²⁴ In contrast to Hardin's view of creativity and more in line with the one presented here are the views of Bunzel (1929) on pottery decoration and Kent (1983:126) on weaving decoration. These analysts recognize the role of inspiration and forethought in creativity.

Attribute Generality and Decision Level. When describing the visibility hierarchy, it was shown that the AP visibility of an attribute depends in part on the generality with which its states have been defined. The same is true of the decision order of an attribute. If an attribute's states are defined very generally, it may have a higher decision order than if its states had been defined with more detail.

This effect is most evident when the decision about an attribute is broken analytically into two or more decisions of different generality. For example, consider the attribute, color. In planning a painting, an artist might first decide whether a certain area should be painted in a warm or cold color. Only later might the artist decide on which specific warm or cold color, such as red or blue, to use. Many decisions might intervene between the two decisions concerning color.

It is important to emphasize that, in such cases, a single attribute such as color does not hold two different levels within a decision hierarchy. To say this would imply analytic confusion over the

²⁴Hardin's view of the creative process reflects the philosophy of the Abstract Expressionist movement of the 1960s during the time of her research. This movement encouraged the freeing of the creative process by envisioning it as a series of spontaneous acts during a series of manufacturing steps (Hunter 1966:60). The movement originated in reaction to traditional Western art, which emphasizes planning.

mapping between form and process. Instead, two different attributes of different generality are involved. In this example, they are color warmth and hue.

The different hierarchical levels that are held by similar decisions of differing generality can be significant to reconstructing processes from forms. The different attributes to which decisions of differing generality pertain can reflect different processes. For example, consider Newton's (n.d.) description of the knots that tribes of the Timbira and non-Timbira linguistic families of the Ge stock in northeast Brazil use to attach the top of a bow's drawstring. She describes the knots in two ways: as looped knots versus knotted knots in general, and more specifically as an array of variants of these. These two attributes are relevant to similar decisions, but decisions that differ in generality and that reflect different processes. The more general distinction between looped and knotted knots distinguishes the bows of two different linguistic families—the Timbira versus non-Timbira tribes—on generally differing sides of a major river (Newton n.d.:Figure 6). The more specific varieties indicate the varying degrees of interaction among different tribes within each linguistic group (Newton n.d.:Figures 4, 5). Thus, different processes are indicated by different attributes that pertain to decisions of different generality and that have different hierarchical positions. Carr and Maslowski (Chapter 9) provide a similar example.²⁵

The Ge example is especially interesting. It shows how the criterion of decision order can complement the criterion of visibility in ordering attributes into a hierarchy that reveals the relationships of forms to their determining processes. In this example, both the general and specific attributes have a similar, obscure level of AP visibility. The criterion of visibility does not allow a hierarchical ordering of the attributes or suggest that they might reflect different processes. An attribute ordering that reveals the different processes is achieved with only the criterion of decision order. It is more effective in this case because, for obscure attributes, the hierarchical structure and content of manufacturing decisions directly reflect the subtleties of varying learned ways of doing and their diffusion. Attribute visibility does not.

Bridging Attribute Decision Level to Determining Processes

The correlations between form and process that were described for the visibility hierarchy also hold for the decision hierarchy. This is so because first-order decisions pertain to larger attributes that are usually more visible, whereas last-order decisions pertain to finer attributes that are usually less visible. Thus, for example, later-order decisions about the more obscure details of an artifact might concern the active expression of personal identity or passive, habitual manufacturing methods, but would not likely concern the active messaging of social identity. Here, the relationship of the processes that determine an attribute to its decision level is an indirect one, mediated by the attribute's visibility (Figure 7-6a).

However, there is also a direct way in which the decision levels of some attributes can relate to the attributes' determining processes (Figure 7-6b). The relationship holds for decisions about attributes that are highly to moderately visible, that communicate messages, and that are ordered sequentially. When this is the case, attributes that pertain to first-order decisions tend to express messages of higher priority, whereas attributes that pertain to later-order decisions tend to express messages of lower priority.

This pattern arises because attributes to which first-order decisions pertain are least constrained in their form and have the greatest range of possible forms for expressing a message. Form can thus be

²⁵Carr and Maslowski (Chapter 9) found that the texture of Ohio Hopewell fabrics could be described in two ways: by whether the weave was compact or spaced in general, and more specifically by the average number of threads/cm. These two attributes pertain to similar decisions, but of two different levels of generality. However, the first attribute apparently reflects a regional, panethnic distinction among social strata, whereas the second attribute reflects more local distinctions among ethnic groups.

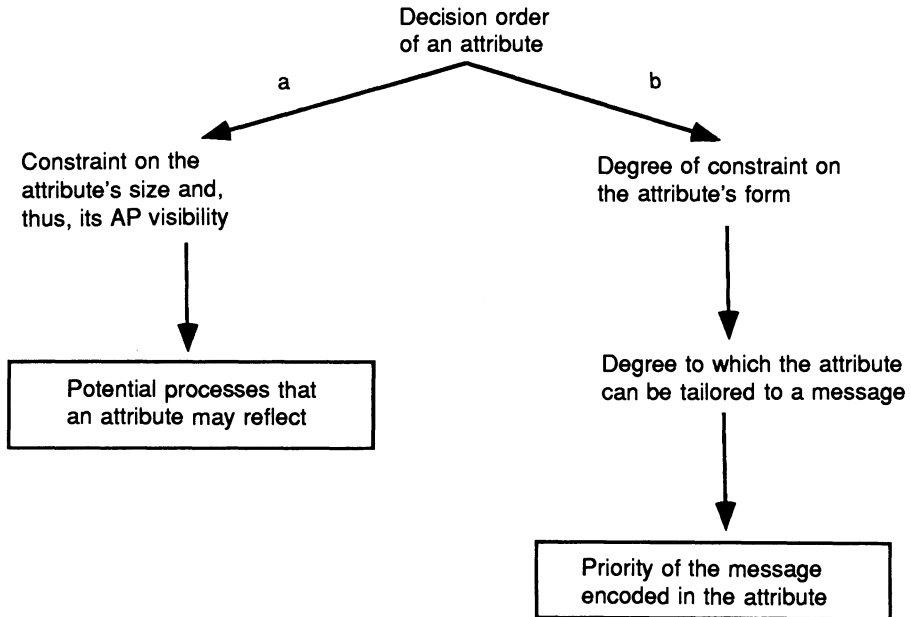


Figure 7-6. (a) The decision order of an attribute indirectly constrains the range of processes that the attribute can reflect by limiting its size and visibility. (b) The decision order of an attribute directly constrains the attribute's potential for expressing important messages by limiting its form. It is assumed that the attributes have high to moderate AP visibility, have potential for communicating messages, and are chosen sequentially.

tailored more closely to message content, which is desirable for important messages (Figure 7-6b). In contrast, attributes to which later-order decisions pertain are more constrained in their form and offer a narrower range of formal alternatives for expressing messages. Form cannot always be tailored as closely to message content, which may not be so critical for less important messages. Thus, important messages tend to be invested in attributes to which first-order decisions pertain and that offer greater potential for the suitable expression of those messages. Less important messages are compromised relative to important ones in their formal expression and are manifested in the more formally constrained attributes to which later-order decisions pertain.

In sum, the decision order of an attribute constrains the range of processes that it can reflect in a dual way, by limiting both its size and form. Whereas the first path of causation is largely described by the bridging arguments that pertain to the visibility hierarchy, the second is not. Thus, ordering attributes by decision criteria complements ordering them by their AP visibility. Both hierarchies are essential for identifying the etic meanings of attributes.

Structures of Decision Hierarchies

Decision "hierarchies" can vary in the structure of their pathways in four ways. The pathways can be (1) sequential or simultaneous; (2) paradigmatic, hierarchical, or a complex network; (3) independent, compensating, or coordinating; or (4) single or multiple independent paths. These dimensions of variation define a number of ideal types of decision hierarchies. Seven common types are shown in Figure 7-7.

The decisions involved in planning artifacts of most media combine two or more types of hierarchies. However, some media tend to be dominated by one type or another (see below and p. 228). Thus, it is necessary to distinguish between the dominant, global structure of a decision hierarchy and the structure of local pathways that are embedded within it.

The seven ideal types of hierarchies are defined as follows. The simplest kind is a sequential, full paradigmatic pathway (Figure 7-7a). In this kind, all attributes are considered, one after another, and all combinations of attribute states can be selected. In contrast, in a sequential, hierarchical, state-dependent pathway (Figure 7-7b), all attributes are considered, one after another, but the state taken by the first chosen attribute determines the states that are relevant for the second, and so on. Only some combinations of attribute states can be selected. In a sequential, hierarchical, attribute-dependent pathway (Figure 7-7c), the state taken by an earlier chosen attribute determines which attributes, as opposed to attribute states, are relevant in later decisions. Consequently, not all attributes are considered in any one decision pathway. Complex networks (Figure 7-7d) are similar to attribute-dependent hierarchical pathways but have diverging pathways that can merge in later decision levels. This structure gives the decision and production processes the character of equifinality. Also, complex networks are not totally sequential: decisions about one attribute can directly affect the decisions made about another several decision levels down, without acting through the decisions at the intervening levels. Simultaneous pathways (Figures 7-7e,f) are distinguished by multiple attributes that can or must be chosen simultaneously as a set at one decision level, rather than chosen sequentially. In a simultaneous independent pathway (Figure 7-7e), no attribute constrains any other and the states of each attribute can be selected independent of the states of others. In a simultaneous compensating pathway or a simultaneous coordinating pathway (Figure 7-7f), choice in the state taken by one attribute at a level affects and must be compensated by or coordinated with the states chosen for other attributes at that level in order to produce some overall result. The attributes are interrelated as a system. Finally, multiple independent pathways exist when the decisions involved in planning an object can be broken apart into two or more independent pathways of any of the above kinds.

Decision hierarchies with attribute-dependent pathways (Figure 7-7c,d) differ from decision hierarchies with state-dependent pathways (Figure 7-7a,b) in how decision order relates to attribute visibility. In a hierarchy with state-dependent pathways, alternative attribute states at one decision level have the same visibility by definition. For example, in the decision hierarchy for planning a dress, as shown previously in Figure 7-4, the two attribute states, having lace on the neckline and not having lace on the neckline, are equally visible. In contrast, in a hierarchy with attribute-dependent pathways, the states of alternative attributes at one decision level (i.e., of the same decision order) may vary in their visibility. For example, in Figure 7-4, the attribute immediately depending on whether a dress is made, overall dress formality, might take states that are considerably more visible than the states taken by some attribute immediately depending on whether slacks are made, such as the cut of the slacks.

Different media are dominated by different kinds of decision hierarchies. Ceramic vessel decoration often involves decisions that are organized primarily as sequential, hierarchical state-dependent or sequential, hierarchical attribute-dependent pathways (Friedrich 1970:333–335; Hardin 1983a: 313–317). Simultaneous coordinating pathways can also occur in the form of grammatical “rules of co-occurrence” among the decorations of different spatial divisions. Examples of this include some pottery of Uruk and Ban Chieng (Hardin 1983a:313). Paradigmatic pathways may also be embedded locally within the global hierarchical pathways that characterize ceramic decision making.

Flint knapping, stone sculpture, and wood carving, as subtractive processes, involve decisions that tend to be more rigidly organized. Sequential hierarchical, attribute-dependent pathways, with some networking, characterize these media (Crabtree 1966:12–15, 17–21; Bordes and Crabtree 1969:3–7; Collins 1975:16–18; Muto 1976:35–55).

Basket making involves decisions that form a complex network with an overall direction (Pryor and Carr, Chapter 8: Figure 8-3). The same holds for the decisions involved in the weaving of fabrics

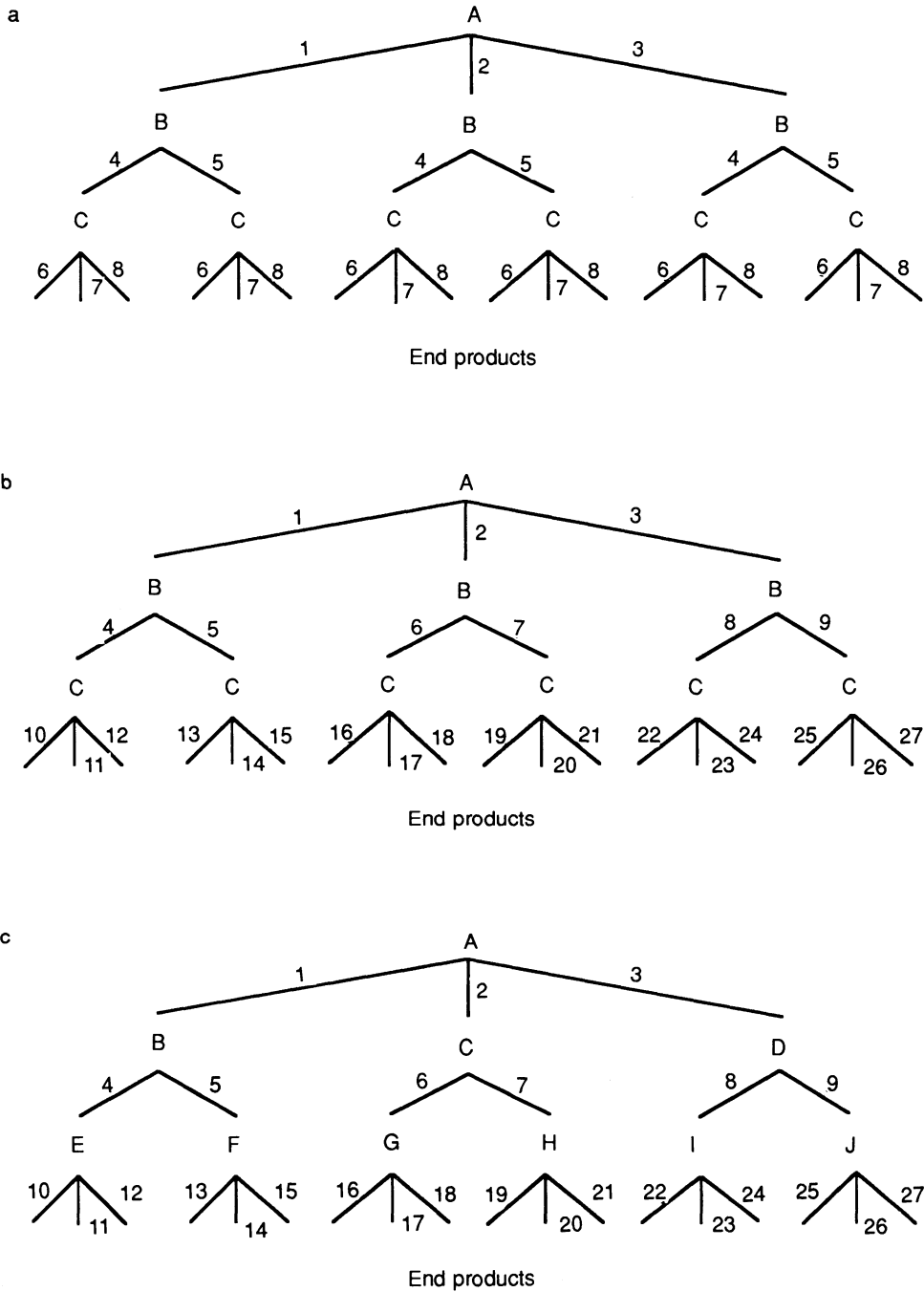
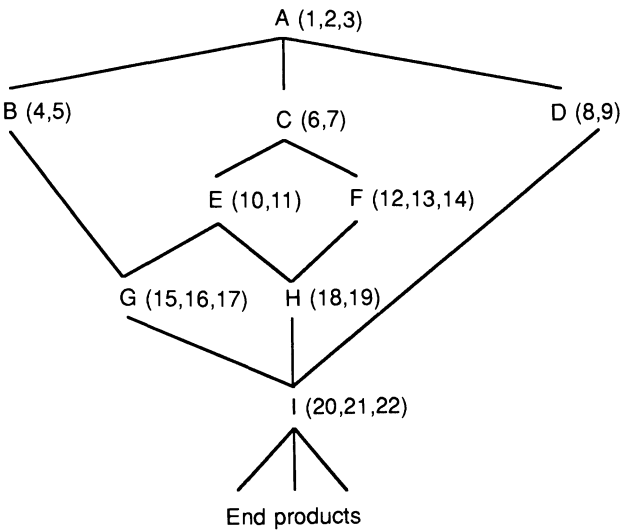
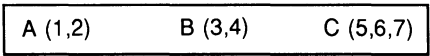


Figure 7-7. Decision hierarchies have various structures: (a) sequential—full paradigmatic; (b) hierarchical state-dependent; (c) hierarchical attribute-dependent; (d) a complex network; (e) simultaneous independent; (f) simultaneous compensating or coordinating; (g) multiple independent sequences or hierarchies. Capital letters represent attributes; numbers represent attribute states.

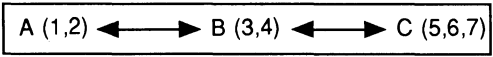
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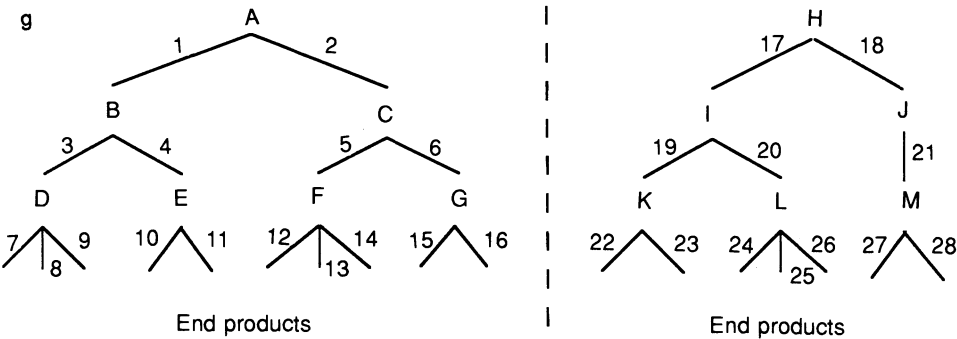


Figure 7-7. (Continued)

(Carr and Maslowski, Chapter 9: Figure 9-3), although many decisions are made simultaneously as sets, in either an independent or compensating manner. Weaving decisions do not tend to follow the hierarchical, state-dependent structure that Emery (1980) has constructed to classify fabrics and that is the standard in textile analysis.

Contemporary Western painting and drawing also involve decisions that are organized as a complex network, with simultaneous independent, compensating, and coordinating decisions. However, in painting and drawing, simultaneous compensating and coordinating decisions tend to be made for aesthetic, syntactic, and semantic reasons, in order to create integrated and meaningful compositions. In contrast, in basket making and weaving, the decisions more often reflect technological, formal, or functional constraints. For example, in weaving, the diameter, spacing, and number of elements, and their material, are chosen together (Carr and Maslowski, Chapter 9: Figure 9-6) in order to create a particular fabric texture and strength at a particular cost per unit area.

The manufacture of cordage involves decisions that are organized into multiple, independent pathways. Each, in turn, may have hierarchical attribute-dependent, hierarchical state-dependent, simultaneous-compensating, and/or simultaneous-independent aspects (Carr and Maslowski, Chapter 9: Figure 9-3).

Implications of Decision Hierarchy Structure for Selecting Relevant Attribute States for Analysis

S. Plog (1980:40–44) has stressed that intersite and intrasite studies of ceramic design similarity or diversity should be based on logically comparable design units. Specifically, the units should be attribute states that are “substitutable,” in that they comprise a set of alternative choices at one decision node.

This analytic rule marks an advance over the approaches used in some previous ceramic stylistic analyses cited by Plog, where little attention was given to explicitly selecting comparable units. At the same time, Plog’s rule is too narrow, given the varying structures that decision paths can have, in both ceramics and other media. The rule pertains correctly to only sequential, paradigmatic or hierarchical, state-dependent kinds of decision pathways (Figure 7-7a,b).

A broader criterion for selecting relevant design units, which can be applied to decision “hierarchies” of all kinds, is that the units be of the same decision *level*, or *order* in the hierarchy, as opposed to pertaining to one decision *node*. Design units that have this characteristic include not only the alternative states of single attributes, but also the states of alternative attributes at one level in attribute-dependent pathways (Figure 7-7c,d). Also included are the states of multiple attributes that can or must be selected simultaneously in an independent, compensating, or coordinating manner (Figure 7-7e,f). From this broader set of potentially relevant design units, those selected for a similarity or diversity analysis should also be similar in their AP visibility and in the scale of the social-spatial units that they reflect, as evidenced by their geographic distribution, if this is known. Considering the visibility and geographic distributional characteristics of the design units as well as their decision order makes it more likely that the selected attributes pertain to a single behavioral or other process.

Decision Hierarchies Compared to Related Approaches

A broad approach for analyzing artifact design that superficially resembles the use of decision hierarchies is the grammatical approach (e.g., Washburn 1977, 1983b; Muller 1979; Roe 1979, 1980). Design grammars are comprised minimally of a list of elementary shapes, and the syntactic and transformational rules for combining or elaborating shapes into more complex units. Design grammars and decision hierarchies are similar in that both are comprised of logical relationships between aspects of design. Also, tree diagrams can be used to visually represent both a sequence of

manufacturing decisions and the sequence of rules in phrase structure and other “competence” or “performance” models (e.g., Chippindale and Boast 1986; Knight 1986; Coyne and Gero 1986). At the same time, decision hierarchies can differ from design grammars in five fundamental ways. (1) A decision hierarchy is based on real-world technological, formal, and cultural constraints rather than on formal-mathematical relations that need not have real-world correlates. (2) In their goals, a decision hierarchy is outward-oriented, linking forms to processes, whereas most design grammars are inward-oriented, aiming ultimately at finding universal cognitive processes. (3) A decision hierarchy is largely an etic structure, whereas design grammars may be etic or emic. (4) A decision hierarchy is built “top-down” rather than “bottom-up.” (5) A decision hierarchy is surficial, with a concern for how content constrains content, rather than depth-oriented with a concern for underlying generative rules.²⁶

Another, decision-making approach to analyzing artifact design is McGuire and Schiffer’s (1983). It complements the use of decision hierarchies in at least two ways. First, it considers utilitarian

²⁶Archaeologists and ethnologists have borrowed grammatical methods from linguistics to describe and “explain” patterning in the designs of artifacts. Although static, structural approaches have been taken (Washburn 1977, 1983b), most grammatical approaches have been generative. These, in turn, have varied in the kinds of rules that they employ and the levels of structure that they address. Some grammars have been built with only simple phrase structures that summarize the underlying structure of a style (e.g., Muller 1979). These comprise “competence” models. Other grammars have extended competence models with context-sensitive or historical-derivational-transformational rules, which link underlying structures to actual surface forms (e.g., Roe 1979:210, 1980:58–62; Knight 1986; Chippindale and Boast 1986). These include both competence and performance models.

The five differences between decision hierarchies and design grammars that are mentioned in the text are made more precise here. First, the logical relations that structure a decision hierarchy pertain to the real world in being based primarily on technological and formal constraints that are determined by the physical world, and secondarily on syntactic and semantic constraints and message priorities that are determined culturally. In contrast, the logical relations in a design grammar are primarily formal-mathematical, and need not reflect real-world processes/constraints other than geometric-spatial limitations (Roe 1979:210, Chapter 2; Chippindale and Boast 1986). Alternative design grammars that similarly generate and account for a corpus of artifacts and artisan performance and competence are evaluated largely on the basis of their formal parsimony rather than the correspondence of their rules to real-world processes (Muller 1979:173–176; Roe 1979:209). However, to the extent that emic criteria are used to select among alternative grammars (see below in this footnote), some rules of a design grammar may correspond to the syntactically and semantically constrained decisions of a decision hierarchy.

Second, a decision hierarchy is outward-oriented in its explanatory goal. Decisions are ordered for the purpose of linking the attributes to which they pertain to the material or behavioral processes and constraints that determine them. Design grammars based on Chomskian linguistics are inward-oriented. They aim ultimately at finding repeated rules within and among design levels that reflect universal cognitive processes (e.g., Hassan 1986), although this goal has not yet been approached and is seen as perhaps irrelevant (Muller 1979:182–183). In making this distinction, the final, inward-oriented explanatory goal of Chomskian design grammars should not be confused with their immediate, outward-oriented, descriptive goal of developing an adequate competence or performance model.

Third, a decision hierarchy is largely an etic structure, in being primarily technologically and formally determined. Within this overall framework may be embedded local emic structures, which reflect syntactic or semantic constraints upon decisions. In contrast, a competence or performance model may be considered etic or emic, depending on the adequacy criteria used to select it from alternative models (Roe 1979:209).

Fourth, a decision hierarchy is a “top-down” structure. It flows from first-order, framing decisions that define the gross structure of an artifact to later-order, constrained decisions about the artifact’s details. A design grammar is a “bottom-up” structure. It starts with minimal elements and rules for their combination and progresses to larger structures.

Finally, a decision hierarchy is surficial. It describes only directly observable structure—how content of one level constrains content at another. A design grammar is depth-oriented. It enumerates the rules that underlie and generate surface structures.

functional constraints on design and their interrelationships with other constraints. Second, it considers choices between the sometimes contradictory goals of artifact production, use, and maintenance, and of different social groups. Social–structural and ecological–adaptive contextual factors are seen as determining the weights given to contradictory goals during the planning of an artifact's design. Decision hierarchies do not consider these factors. Future work to integrate McGuire and Schiffer's approach with the use of decision hierarchies described here would likely prove fruitful.

THE PRODUCTION STEP SEQUENCE

The design attributes of an artifact can be ordered into a hierarchy by their position in a sequence of production steps, in addition to their positions in a visibility and a decision hierarchy. The order of production of attributes can correlate, more or less, and either positively or negatively, with their visibility level and decision order.

A production sequence is useful in at least two ways as a component of the unified middle-range theory built here. First, it can be used to substantiate or refine an attribute hierarchy already established with the visibility and decision hierarchies. The utility of the production sequence for this task depends on the strength of correlation it has with the visibility and decision hierarchies. Second, the production sequence can determine the strength with which processes map to form. This, in turn, depends on the direction of correlation of the production sequence with the visibility and decision hierarchies, as discussed on pages 231–234.

The utility of the production step sequence in assigning possible processual meanings to design attributes has not been fully realized in past archaeological studies. This is the case in part because archaeologists have tended to define design hierarchies with one criterion—attribute visibility, decision order, or production step, alone—rather than all three in a complementary fashion. Also, some archaeologists have not kept clear the distinction between the production step sequence and decision hierarchy, and have vacillated between the two criteria when ordering design attributes into a hierarchy (e.g., Whallon 1968; Hardin 1977, 1979; Graves 1982).²⁷

This section first considers the nature of arrangement of a production step sequence. Its direction of correlation with the visibility and decision hierarchies, and how this varies among media, are addressed. Next, the factors that determine the strength of correlation between the production sequence and visibility and decision hierarchies are enumerated. Third, the manner in which the relative directions of these hierarchies limit or allow spontaneity in the creative process, and encourage

²⁷The production step sequence, and decision hierarchy have not usually been clearly distinguished when ordering design attributes into a hierarchy. Whallon (1968:223) introduced the concept of levels of style without explicitly stating any criterion by which the levels should be defined. Early in her work, Hardin (1977:109, 1979:92–93) sometimes vacillated between the two criteria of position in the production sequence and position in a decision hierarchy when characterizing the levels of attributes and the structure of San José painted ceramic decorations. So, too, did Graves (1982:306) in his theoretical discussion of ceramic decoration. Later, Hardin (1983b:9) recognized the significance of the conceptual distinction: “the processual order in which design structure is realized must be distinguished from design structure, itself; . . . the fact that one element is painted after another does not necessarily mean that the second is structurally subordinate to the first.” However, Hardin did not offer general operational methods for defining a decision hierarchy (one aspect of her “design structure”) in contrast to a production sequence. In addition, Hardin (1977, 1983b), Redman (1977), Braun (1977), and Plog (1980) have tended to use one criterion or the other to order attributes, without justifying their choice in terms of middle-range theory (see Footnote 2, p. 179). Preferable to these past approaches to defining a design attribute hierarchy is to use all three of the visibility, decision order, and production step criteria together and in complement to order attributes. This is advantageous because the different criteria affect the mapping between process and form in different ways.

certain kinds of processes to be manifested in form, is defined. These relationships comprise middle-range theoretic bridging arguments.

The General Nature of Arrangement of a Production Step Sequence Compared to the Visibility and Decision Hierarchies

An artifact's production sequence can correlate either positively or negatively with its decision and visibility hierarchies. In other words, attributes of an artifact may be produced in approximately the same or reverse order as decisions about them are made, and they may be produced in approximately the same or reverse order as their AP visibility. This varying relationship differs from the constant one between the visibility and decision hierarchies, which always correlate positively.

Whether an artifact's production sequence correlates positively or negatively with its decision and visibility hierarchies depends on the medium. For many media, the production sequence approximately follows the planning sequence and the AP visibility of attributes. Production begins with attributes and corresponding decisions that define the gross structure, composition, layout, or outline of the artifact. It proceeds to attributes and corresponding decisions that define the finer details of design. This is generally true for potting, flint knapping, stone sculpting, carving, oil and acrylic painting, and drawing. In contrast, in other art forms, the sequence of production steps is the reverse of the planning sequence and AP visibility of attributes. The artisan begins by making a sequence of decisions about the artifact's attributes, from gross to fine, and then produces the artifact by creating its details and building toward its gross form. This is true of basket making, fabric weaving, cord making, and certain portions of the production steps of art forms that involve resist or masking procedures, such as batik and water color.

For example, in painting a landscape in oils or acrylics, the artist might begin production with the broad divisions of the land and sky spaces, which will serve as the background. The painter would then proceed to fill these spaces with various objects, working from their overall form and color to their details. Production proceeds from attributes that pertain to first-order, framing decisions to attributes that pertain to later-order, constrained decisions. In contrast, in watercolor, before applying washes to the land and sky spaces, the artist first must mask out the details within these spaces which are to be painted in other hues, later. Also, in weaving fabrics and manufacturing cordage, one begins with the details of spinning thread and twisting yarns, and then combines these primary elements or weaves them into larger structures. Thus, production begins with attributes that pertain to later-order, constrained decisions and that are less visible. Production then proceeds to attributes that pertain to first-order, framing decisions and that are more visible.

Carr and Maslowski (Chapter 9:Tables 9-1, 9-3) illustrate in detail the reversed relationship between the production sequences and the decision and visibility hierarchies of fabrics and cordage.

The Strength of Correlation between the Production Sequence and the Visibility and Decision Hierarchies

The production sequence of an artifact and its visibility and decision hierarchies can be compared for not only their direction of correlation, but also their strength of correlation. In other words, does the order of attributes by their production step correspond well with their order by their AP visibility and decision level?

Where the degree of correlation is high, the production sequence is useful for substantiating and/or refining an attribute hierarchy that has already been established on visibility and decision criteria. For example, Hardin (1977:109, 1979:92–93) was able to implicitly use the decision hierarchy and production sequence for San José painted ceramic decorations more or less interchangeably to establish an attribute hierarchy for the decorations. The strong correlation between production order and decision order in the San José case made this possible.

Correlation of the production sequence to the visibility and decision hierarchies of an artifact can range from strong to partial. Strong correlation is promoted when decisions in the decision hierarchy are made largely sequentially as opposed to simultaneously, and are arranged in a hierarchy rather than a complex network or multiple independent sequences. When decisions are made sequentially, most decisions will not have tied ranks and can correspond, one for one, with production steps.

Correlation between the production sequence and visibility and decision hierarchies varies with the medium. Correlation is greatest for subtractive manufacturing processes because, in general, these are dominated by sequential decisions. Flint knapping, stone sculpting, and wood carving are examples. Lower correlations can occur for fabric and basket weaving, which can involve many simultaneous decisions, although this depends on the item (Pryor and Carr, Chapter 8:Figure 8-3; Carr and Maslowski, Chapter 9:Table 9-3, Figure 9-3, Figure 9-6). Lower correlations can also occur for cord making (Carr and Maslowski, Chapter 9:Table 9-1, Figure 9-3), which involves multiple independent decision sequences. Correlation is moderately high for most other media. Thus, media differ in the degree to which the production sequence is useful for substantiating and/or refining the attribute hierarchy of an artifact.

Bridging Form to Determining Process: The Role of Spontaneity during Production

When inferring the processes that are reflected in an artifact's form, it is essential to evaluate the degree to which the artifact in general and its individual attributes have been produced spontaneously rather than with planning. This is so for two reasons. First, the degree of spontaneity during the production of an artifact determines, in part, the degree to which personal messages, projections, or other forms of self-expression, are actively invested in its attributes. Spontaneity encourages the expression of the individual. Through spontaneity, by definition, the artisan momentarily breaks free from the active or passive conventions of his society and culture, from the traditions of the artisans with whom he or she interacts, and from personal habits, which might otherwise have constraining effects in a well-planned creation. Second, the degree of spontaneity during production determines the degree to which the unconscious mind and its stores of personal and depth-psychological, archetypal imagery, rather than the culturally constrained imagery of the conscious mind, are formally expressed (Carr and Neitzel, Chapter 14). Thus, information about spontaneity during production is useful in assessing the likelihood that certain kinds of processes have caused an artifact's form.

The level of spontaneity during production depends minimally on six factors. These are: (1) the relative directions of the production sequence and decision hierarchy; (2) the extent to which decisions about attributes are made simultaneously or sequentially; (3) the medium; (4) whether inspiration for the artifact's manufacture stems from a detail of its design and a later-order decision, which requires more complete planning of the artifact and permits less spontaneity in order to realize that detail; (5) cultural values about the acceptability of creativity (Roe, Chapter 2); and (6) whether the artisan's personal approach to creation is more spontaneous or disciplined (Roe 1979:207).

The first three factors are technological and are archaeologically visible without contextual information. Thus, they are quite useful in assessing whether spontaneity and the expression of the individual and the unconscious were allowed during production. Let us consider these three.

Spontaneity and the Production Sequence. The relative directions of the production sequence and decision hierarchy of an artifact determine the degree to which spontaneity is allowed during production in a very direct way. Their relative directions set the degree to which the artisan must envision the final product in detail and make a full hierarchy of decisions before production or early in production, so that the desired details can be realized.

Three situations can arise in this regard (Figure 7-8). The first two occur when the decision hierarchy and production sequence have the same direction and define a similar ordering of attributes.

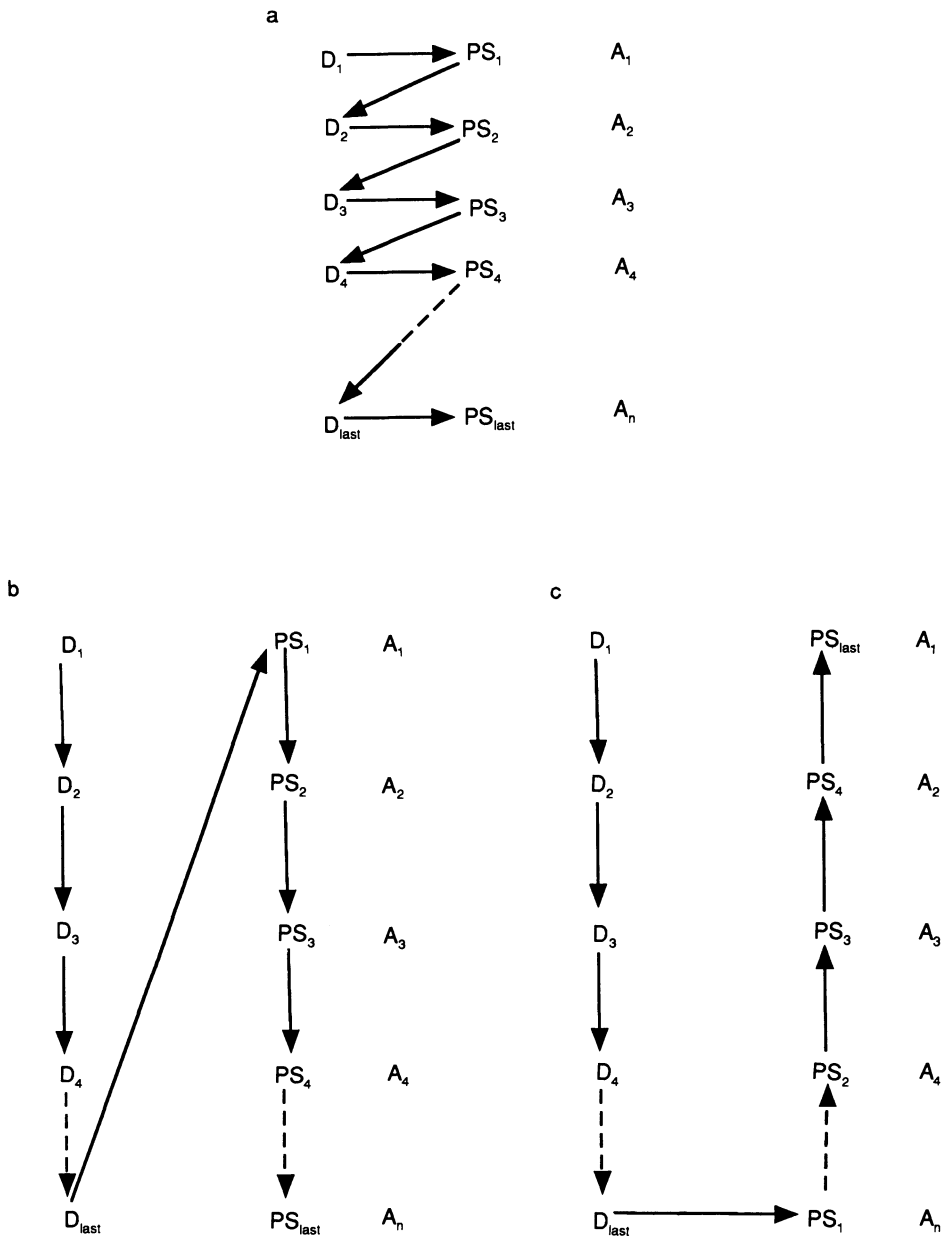


Figure 7-8. The relative directions of the decision hierarchy and production sequence determine whether it is necessary to envision the artifact end product in detail, and to make a full hierarchy of decisions, prior to production. (a) The decision hierarchy and production sequence have the same direction, which allows spontaneity during production. In this case, the end product is not envisioned at the beginning of production and spontaneity occurs. (b) Same as A but the endproduct is envisioned in its entirety before production and the opportunity for spontaneity is not taken. (c) The decision hierarchy and production sequence have reverse directions, which does not allow spontaneity. The end product must be envisioned before production. S = a decision; PS = a production step; A = an attribute.

In this case, spontaneity and changes in plans can occur along the way as the artisan progresses from creating the broader aspects of the artifact's design to creating its details (Figure 7-8a). There are many opportunities for the artisan to spontaneously invest his or her own personal touches in the artifact, or for the artisan's unconscious mind to express itself. Tarascan painted ceramics (Hardin 1979:92) illustrate this situation.

However, spontaneity and spontaneous expression of the individual and the unconscious need not occur, even though they are allowed by the similar directions of the decision and production hierarchies (Figure 7-8b). Whether these opportunities are taken depends on the artisan's preferences for and cultural values about spontaneity in the creative process. The outcome also depends on whether a detail of design and a later-order decision have inspired the item's manufacture. To realize a detail that serves as the inspiration for producing an artifact requires more complete planning and disciplined production of an item's design, from the item's gross form to its details.

The third situation, in contrast to the first two, occurs when the decision hierarchy and production sequence have the reverse direction and define approximately opposite orderings of attributes. By definition, the artisan must envision much of the finished product, from its gross form to its details, and make many of the hierarchy of decisions about these attributes, before production is begun. Less spontaneity and spontaneous expression of the self and the unconscious is possible (Figure 7-8c). For example, a weaver's decision to create a fabric that has the perceptual texture of a very ribbed plain weave—a gross characteristic—requires the weaver to envision and decide upon not only this attribute, but also a whole chain of attributes before production. These attributes range from gross to fine, are technologically and formally constrained by the grosser attribute of perceptual texture, and must be produced before that texture is realized. The chain of decisions and attributes includes whether to use two sets of elements instead of one, whether to use interlacing warps and wefts rather than interacting ones, whether to interlace warps and wefts in a compact manner, and whether to use thick concealed elements of many ply or of thick fibers rather than thin concealed elements. With this required planning, there is less room for spontaneity and spontaneous expression of the self and the unconscious during production.

The three situations shown in Figure 7-8 are idealized models. Any given manufacturing process may exhibit a mixture of them. Different models can apply to different stages of manufacture.

Spontaneity and the Structure of the Decision Hierarchy. When the production sequence and decision hierarchy for an artifact have the same direction, spontaneity during manufacture is not limited. If and only if this is the case, then a second technological factor also bears on the degree of spontaneity that is possible. This is whether the structure of the decision hierarchy is dominated by simultaneous or sequential decisions. Simultaneous independent, compensating, or coordinating decisions at a single decision level offer more alternative combinations of attribute states and artifact designs than does a series of single decisions in a sequential hierarchy. The greater range of choices affords more opportunity for spontaneity during production.

Spontaneity and the Medium. The relative directions of the production sequence and decision hierarchy, and the degree to which simultaneous decisions dominate a decision hierarchy, both depend fundamentally on the medium. As a consequence, media differ systematically in the potentials that they offer during production for spontaneity and spontaneous expression of the individual and the unconscious. Table 7-11 summarizes these relationships. Sackett (1982:80–104) has discussed, at length, the different potentials that ceramics and lithics offer for active expression during production (see also Clark 1989:29–30,33).

In sum, the level of spontaneity that is possible during an artifact's production is technologically determined by the relative directions of the production sequence and decision hierarchy, the extent to which decisions are made simultaneously, and the dependence of these two factors on the medium. In turn, the level of spontaneity determines, in part, the degree to which personal messages, projections

Table 7-11. Some Fundamental Characteristics of the Production Sequences and Decision Hierarchies of Various Media

Characteristic	Subtractive production processes		Additive production processes	
Relative directions of the production sequence and decision hierarchy	<i>Same for:</i> flint knapping, stone sculpting, wood carving	<i>Same for:</i> potting, ceramic decoration, oil painting, acrylic painting, drawing	<i>Mixture for:</i> watercolor painting	<i>Opposite for:</i> fabric weaving, basket weaving, cord making
Kinds of decisions that predominate in: the decision hierarchy	<i>Sequential for:</i> flint knapping, stone sculpting, wood carving	<i>Sequential for:</i>	<i>Mixture for:</i> potting, ceramic decoration, oil painting, acrylic painting, watercolor painting, erasable drawing	<i>Simultaneous for:</i> fabric weaving, basket weaving, cord making
Degree of spontaneity allowed during production, as a function of the first two characteristics	<i>Little for:</i> flint knapping, stone sculpting, wood carving	<i>Little for:</i> fabric weaving, basket weaving, cord making	<i>Moderate for:</i> potting, ceramic decoration, watercolor painting, pastel drawing	<i>Much for:</i> oil painting, acrylic painting, erasable drawing

of the unconscious mind, and other kinds of self-expression can be manifested in attributes of high to moderate AP visibility. Because the three technological factors that influence spontaneity can be known from an artifact's design alone, they are useful for reconstructing the potential etic meanings of its attributes.

Spontaneity, the Medium, and Additive versus Subtractive Production. Archaeologists emphasize the distinction between additive and subtractive production processes, especially those of potting and flint knapping, in characterizing stylistic variation and communication. Artifacts produced by subtractive processes are seen as more constrained in form and in their message potential (e.g., Sackett 1982; Clark 1989).

Although there is some value to the distinction between additive and subtractive production, the distinction is also confusing and does not especially encourage the building of middle-range theory. This is so because it divides technologies inconsistently (Table 7-11) along two dimensions that affect the mapping of process to form. These dimensions are: (1) whether the directions of the production sequence and the decision hierarchy are the same or different, and (2) whether the decision hierarchy is dominated by sequential or simultaneous decisions (see pp. 225, 228, 231–232). Both of these dimensions affect the degree to which spontaneity is possible during production and, thus, in part, the potential for stylistic variation and the communication of personal messages.

It is true that artifacts manufactured by subtractive processes such as flint knapping, stone sculpting, and wood carving are generally uniform in these dimensions (Table 7-11). The production sequences and decision hierarchies of such artifacts have the same direction and their decision hierarchies are predominantly sequential. Thus, artifacts made by subtractive processes usually do not encourage spontaneity and have limited communication potential. However, artifacts that are produced by additive processes, such as painting, drawing, weaving, and cord making are quite

diverse in the two dimensions (Table 7-11). They are more diverse in the potentials for spontaneity and personal communication that they offer. Herein lies a potential for confusion and the basis for the infertility of the additive–subtractive distinction for building middle-range theory.

THE GEOGRAPHIC DISTRIBUTION HIERARCHY AND CONTEXTUAL INFORMATION

Attributes that have been ordered by their AP and/or AC visibility and by their positions in the manufacturing decision hierarchy and production sequence can be interpreted for the broad kinds of processes and constraints that they might reflect. Technological, social, or finer-scale processes, and active or passive processes, can be inferred as the possible determinants of higher and lower-order attributes (Table 7-1). However, the specific processes (Table 7-2) that determined the attributes cannot be known from this information, alone. The possibilities remain wide. This is especially true for higher-order, more visible attributes. These can reflect a greater range of processes than lower-order, less visible attributes.

More specific interpretations of the etic meaning(s) of an attribute can be made when one also considers additional data of several kinds. First are the expanses over which the attribute's alternative states are distributed geographically. Their distributions in absolute space, in comparison to each other, and in comparison to the states taken by other attributes can offer insight into etic meanings (Table 7-1, column 5). Second are the forms of these distributions (Table 7-2). Third are kinds of other contextual information. In this section, each of these kinds of additional data are considered. Further bridging arguments for linking process to form are also offered.

The Scale of Attribute Distribution and the Geographic Distribution Hierarchy

The geographic areas over which the attribute states of an artifact extend can be envisioned as a hierarchy. Some attributes may have one or more states that are widely distributed. Other attributes may have states that are more locally distributed. The order of attributes by the scales of their geographic distributions reflects the processes that determine both their form and distribution. Consequently, the geographic hierarchy can be used like other hierarchies to bridge form to process (Table 7-1).

Bridging the Scale of Attribute Distributions to Determining Processes

The geographic area over which an attribute state is distributed indicates the scale of the processes and constraints that caused it. In turn, information on the scale of causal processes provides insight into the kind of ecological or social unit that the attribute might reflect.

Specifically, people in a landscape are organized into a hierarchy of units of increasing size. These range from the individual, through the household and networks of interacting artisans, through various social subgroups and the community, to the society at large, broader regional networks, and areas of similar resources, ecology, and techno-adaptation. These units are shown in Table 7-2. In turn, each kind of unit is definable by, and functions through, processes that are unique to it. Some of these are listed in Table 7-2 (e.g., communication, projection, enculturation, active interaction). At a yet more basic level, each unit's processes are the product of various constraints and triggering events that tend to occur at and be unique to the scale of the unit. Examples of such constraints and triggers include the unit's basic needs for survival, social and environmental conditions that constitute its adaptive milieu, and its economic, social, political, and ideological values, themes, and agendas, be they adaptive over the long run or not. In the case of the individual, the constraints and triggers also

include personal preferences and motives. Other examples are enumerated at length by Carr and Neitzel (Chapter 1:Table 1-1) and in Table 7-2. The distinction between processes, constraints, and triggering events is defined by Carr and Neitzel (Chapter 1). Finally, some of these different processes and constraints may have stylistic correlates in different attributes of varying visibility, decision order, and production order. This follows by reason of all the bridging arguments that have previously been presented in detail. The states taken by these different attributes will extend over areas that correspond to the expanse of the processes and constraints that they reflect. Thus, the absolute and relative geographic areas over which an attribute's states are distributed can be used to infer the ecological and social units, and their defining processes and constraints, which the attribute reflects.

For example, the society and the family are units of differing size and geographic scale. They are distinguished by different sets of processes, which pertain to their different issues and problems. The society is the unit within which, for example, social roles are defined and mythology is selected and elaborated. The family or household is the unit within which enculturation occurs. These different processes are the product of different constraints and/or triggering events, often of the scale of the unit within which the processes operate. For example, the process of definition of social roles is a response, in part, to basic tasks that must be accomplished within any society. The process of creation of a society's mythology may be constrained by the content of the cultural unconscious levels of the psyche. It may also reflect the society's history of contacts, which have triggered the diffusion of ideas and images from elsewhere. In contrast, the enculturation process within a household might be constrained by the specific kin and power relations between teachers and students, or by the mobility of the family members. Finally, a society's roles and mythology, and enculturation within a household, might be reflected in different attributes of varying visibility, decision order, and production order. Social roles and mythological personages and themes might be coded within highly visible attributes, while patterns of enculturation might be reflected in less visible attributes. The states taken by these attributes would extend over areas that correspond to the expanse of the processes and constraints that define the society and the family, respectively. Thus, the absolute and relative geographic areas over which an attribute's states are distributed can be used to infer the ecological and social units, and their processes and constraints, which the attribute reflects.

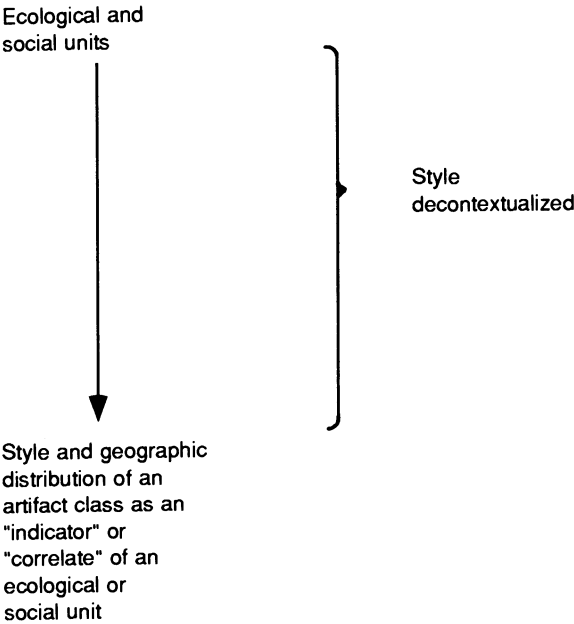
Significantly, this understanding of an artifact's design and styles, its attribute distributions, and their causes differs from the traditional and New Archaeology's view of a material style as simply an "indicator," "correlate," "symptom," or "index" of a social unit or cultural subsystem (Conkey 1990:8–10). The concepts of design and style are bridged here not directly to ecological or social units (Figure 7-9a), but to intervening processes and their causal constraints and triggering events, which pertain to those units (Figure 7-9b). Thus, the approach is "contextualizing" rather than "decontextualizing" (Conkey 1990:10). By definition, this perspective integrates contextual factors, such as the adaptive milieu, values, themes, strategies, preferences, and motives, which constitute the context of artifact production, use, and display.

Detailed examples of spatial–social units that differ in scale, in the processes and constraints that operate within them, and in the design attributes that reflect those units, processes, and constraints are given by Pryor and Carr (Chapter 8), Carr and Maslowski (Chapter 9), Rosenthal (Chapter 10), Morris (Chapter 13), Wobst (1977), and Wiessner (1983, 1984) for several media. Hodder (1982a:189) documents similar relationships, but focuses on different artifact classes rather than on different design attributes within one artifact class.

The General Nature of Arrangement of the Geographic Distribution Hierarchy

As a first approximation, it is expectable that the order of an artifact's attributes according to the geographic expanse of their states will correspond with their order according to their AP visibility and positions in the decision hierarchy and production sequence. Attributes with states that are more

a



b

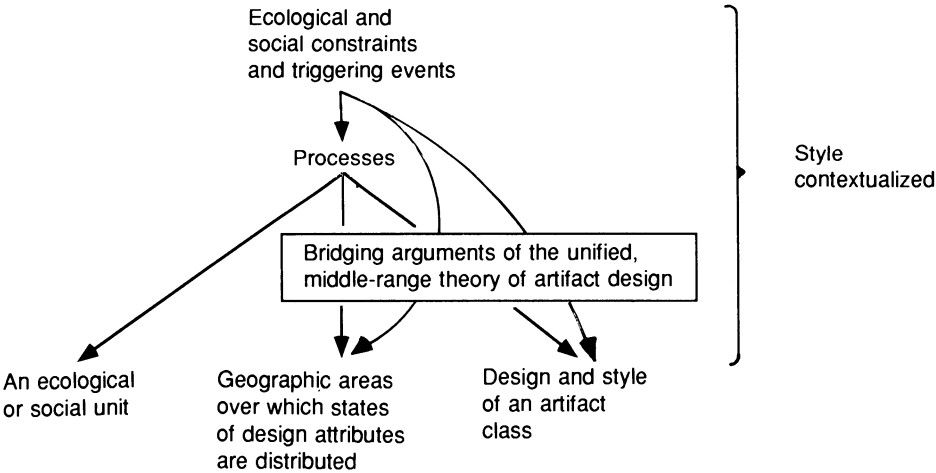


Figure 7-9. (a) The decontextualized, traditional and New Archaeology view of style and stylistic distributions as "indicators" or "correlates." (b) The contextualized perspective of an artifact's design, styles, and attribute distributions that is taken by the unified, middle-range theory presented here and by postprocessual archaeology.

widely distributed will tend to be attributes that are more visible, higher in the decision hierarchy, and at the corresponding extreme of the production sequence. This correlation is an indirect one. It arises because the factors that determine an attribute's AP visibility and the factors that determine its distributional scale are both affected by the size of the social unit to which the attribute pertains (Figure 7-10). Correspondence between the geographic distribution hierarchy and other hierarchies for two or more hierarchical levels is well documented in the archaeological literature.²⁸

Correlation between the geographic distribution hierarchy and other hierarchies can be disrupted by a number of circumstances. First is when the properties of raw materials vary significantly over a landscape. In this case, the alternative states taken by highly visible, strictly technological attributes of an artifact may have localized distributions rather than the widespread distributions expected on the basis of attribute visibility and decision order alone. Second, when artifacts are exchanged, the states taken by poorly visible attributes may have a wide distribution rather than the localized one expected on the basis of attribute visibility and decision order alone. Similarly, when local groups are highly mobile and share sites and territories within a region, poorly visible attributes may have a wide distribution rather than the localized one expected on the basis of attribute visibility and decision order alone (e.g., Yellen and Harpending 1972:251). This is likely among hunter-gatherers with nonterritorial local bands and among pastoralists. A final disruptive circumstance is when less inclusive social units and their messages become more important for expression than more inclusive units and their messages. In this case, the smaller-scale units and processes pertinent to them will tend to be expressed in more visible attributes of a higher decision order. Although one would expect the states of these attributes to be distributed widely on the basis of their visibility and decision order, alone, they will instead tend to have a restricted distribution that corresponds to the small-scale units that they reflect. Any of the eight factors that lead to exceptions to the cross-cultural relationship between social unit inclusiveness and attribute AP visibility (see pp. 204–205) can cause this situation. Decreasing ecological risk and prosperity, short-term local stresses, and cultural values that emphasize local groups are among these factors.

The Form of Attribute Distribution

The form of distribution of an attribute's alternative states over space, like their extent, gives insight into the processes and constraints that determine the attribute and the kind of ecological or social unit that it reflects. Four types of model distributions are useful for characterizing the distributional form of an attribute and identifying its determinants. These are clinal, uniform-unbounded, patchy-bounded, and random distributions (Table 7-2).

Operational Issues in Defining Distribution Form

The model that characterizes the form of an attribute's distribution depends not only on its distribution, but also on two analytical parameters. The effects of these must be considered during

²⁸Correspondence of the geographic distribution hierarchy to the visibility and decision hierarchies, and to the production step sequence, for multiple levels of artifact design are shown by Carr and Maslowski (Chapter 9:Table 9-6) for Ohio Hopewell weavings, by Wobst (1977:Tables 2,3) for Yugoslavian clothing, by Wiessner (1983; see also above, pp. 203–204) for San projectile points, and in the above syntheses of Hardin's (1977, 1983b; Friedrich 1970) data on Tarascan ceramic decorations (Table 7-7) and Lowman and Alland's (1973) data on New Guinea Maring war shield decorations. Other cases that illustrate the correspondence for simply two hierarchical levels include Kent's (1983:121–124) data on Pueblo III period fabrics of the American Southwest, Graves' (1982) study of Philippino Kalinga ceramic decorations, Voss's (1982) study of Neolithic ceramic decorations, Washburn's (1983b) study of Neolithic Greek ceramic decorations, and Pryor and Carr's (Chapter 8) study of Pomo Indian basketry. All of these have been discussed previously.

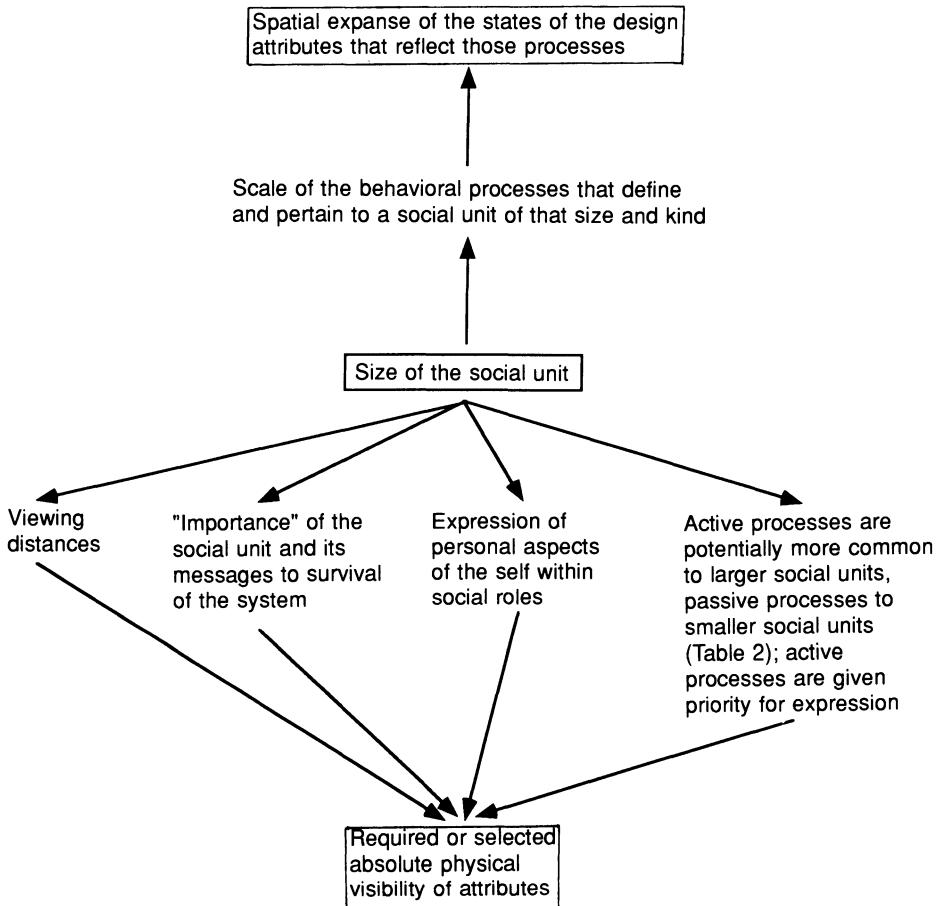


Figure 7-10. The scale of distribution of an attribute's states often correlates with the attribute's AP visibility, and its positions in the manufacturing decision hierarchy and production sequence, because all of these characteristics are determined in part by the size of the social unit. See text on the visibility and geographic hierarchies for descriptions of these relationships.

interpretation. The first parameter is the area of the research universe and the number of social units it encompasses. For example, an attribute that communicates social affiliation might have a uniform-unbounded distribution at the scale of one social unit, but a patchy-bounded distribution at a larger scale containing multiple units. Thus, the relationship of processes to the forms of attribute distributions that they determine can be defined only when the area of the research universe is specified.

This qualification has not generally been appreciated when deducing the spatial-stylistic correlates of processes (e.g., Braun and Plog 1982:512; Voss and Young, Chapter 3; Plog, Chapter 11). In contrast, it is well understood in other geographic applications, such as the analysis of artifact distributions. (See Carr [1984:143–161] for a review.) In this chapter, the area of the research universe is specified when relating processes to distributions (Table 7-2).

The second analytical parameter that affects how the form of a distribution is characterized is the number of alternative states that the attribute can assume. An attribute with a clinal distribution can be

analytically constrained to and appear as a patchy-bounded or uniform-unbounded distribution if the attribute takes only two or a few states, as opposed to many rank or continuous-scale states (Figure 7-11). This effect can confuse processual interpretation unless it is taken into consideration. Carr and Maslowski (Chapter 9) point this out when interpreting the distribution of a two-state attribute, the direction of twist of yarns in fabrics.

Bridging the Form of Attribute Distributions to Determining Processes

Considering the two operational issues just discussed, it is possible to posit the different forms of distribution that an attribute will have when it is determined by various processes or constraints (Table 7-2). The expectations are made under several assumptions. First, raw materials are consistent over the research universe. Second, artifacts are not exchanged between local groups (Plog 1978:153). Third, local groups are sedentary or have tethered mobility (Yellen and Harpending 1972:250–251). Fourth, specific design attributes have become associated with specific social units and/or processes over the course of a stable history of social relations and their stylistic expression (Wiessner 1984:226). Table 7-2 elaborates on patterns discussed by Voss and Young (Chapter 3).

Table 7-2 reveals that processes at the social, interacting artisan, and personal levels tend to be distinguished respectively by patchy/uniform, clinal, or random regional distributions of attribute

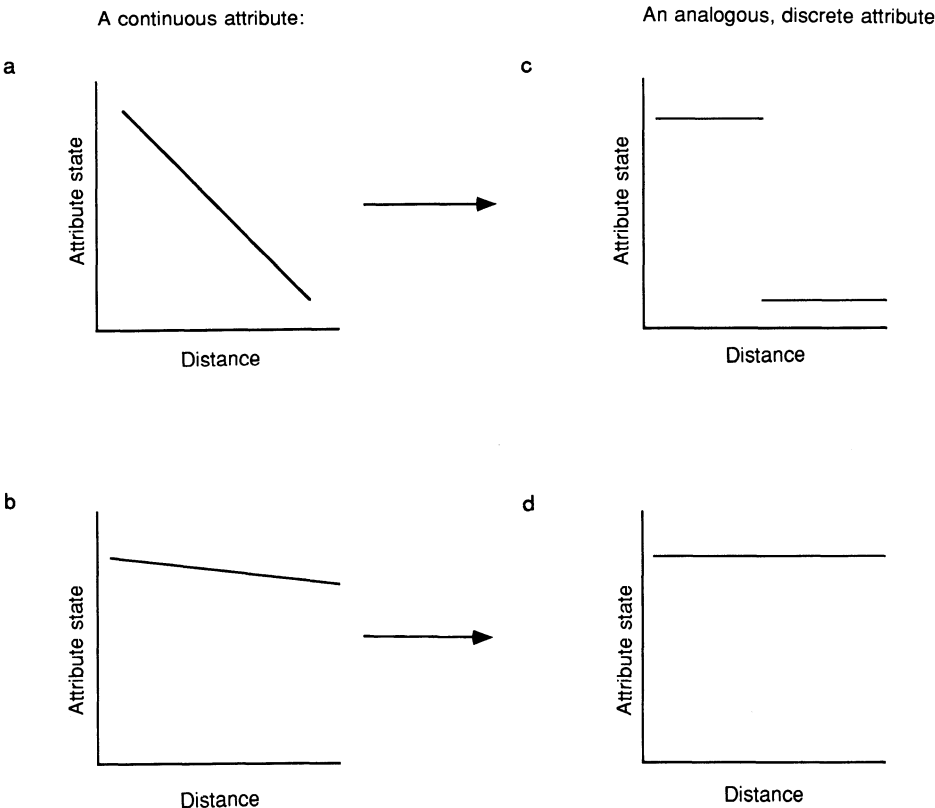


Figure 7-11. A clinal distribution (a, c) can be constrained to and appear as a (b) patchy-bounded or (d) uniform-unbounded distribution, if the attribute of interest can assume only two or a few states.

states. These differences can be used to refine the interpretations of an attribute that are inferred from its positions in the visibility and decision hierarchies and the production sequence, and to corroborate the finer interpretations that are inferred from the scale of the attribute's distribution.

However, specific kinds of processes within each of the social, interacting artisan, and personal levels are usually not distinguishable from an attribute's visibility, manufacturing decision, production step, and geographic distributional characteristics, alone. Perhaps most problematic are the similar correlates of certain basic categories of processes that archaeologists often attempt to distinguish. These are: (1) active social-level processes versus the passive sharing of a history of interactions by a social group; (2) active communication of boundaries between groups versus the active communication of intragroup cooperation; (3) active communication of boundaries between groups to express their competition or differentiation versus active communication of boundaries between groups as part of the strategies of competitive subgroups within them; and (4) active personal-level processes versus the passive history of a person's interactions.

The first distinction, between active social-level processes and the passive sharing of a history of interactions by a social group, can be made under only one circumstance within the theoretical framework presented here. When an attribute is a nonrelational, obscure trait, and has a patchy-bounded, uniform-unbounded, or clinal distribution over a society, community, or social segment, the attribute can be inferred to reflect the passive sharing of a history of interactions by that group. It may also possibly reflect the active or passive interaction among groups. When an attribute is more visible, and has a patchy-bounded or uniform-unbounded distribution, it can reflect many social-level processes and the appropriate interpretation is unclear (Table 7-2).

This ambiguity is perfectly expectable. Highly visible isochrestic patterning that reflects the passive sharing of a history of interactions by a social group can later be imbued with social meaning and come to be used iconographically to express group identity and other messages (Barth 1969; Sackett 1968:75, 1985; Wiessner 1985:162) as the adaptive context changes and the expression of identity and other messages becomes important. Also, passive, environmentally and technologically determined isochrestic variation (Figure 7-12a) or environmentally determined functional variation (Figure 7-12b) in an artifact class that varies among social groups can come to have social meaning and be used to actively express social messages (Adovasio and Gunn 1977:151; Carr, Chapter 6:166–167). Moreover, those social meanings can wane when they no longer remain essential. The criteria that distinguish active social processes with iconographic material correlates from passive social processes with isochrestic or functionally alternative material correlates are contextual as much as formal (see p. 245).

From this perspective, Wiessner (1985) and Sackett's (1985) debate over the iconologic versus isochrestic interpretation of regional similarities and differences in visible attributes of San projectile points is understandable. The answer to the debate can be found only in contextual data, which apparently was not available to either researcher.

The second distinction, which concerns the active communication of differences between groups versus the active communication of within-group solidarity, cannot always be inferred from the visibility and geographic distribution of design attributes. Both processes, as well as many others, manifest formally in physically visible attributes with patchy-bounded regional distributions. Communication of "us versus them" and "us" both produce patchy-bounded distributions of styles. However, within-group solidarity may also be communicated with visible attributes that are shared among adjacent social groups and that have uniform-unbounded distributions across them. Attributes that are emphasized as "us" within a group may occur among adjacent groups where they are not so valued. The extension of the Norwegian language beyond Norwegian ethnic groups into adjacent Lappish communities (Eidheim 1969:39–44) is a nonmaterial example. In such cases, the process of communicating solidarity within a group is distinguishable from the process of communicating between-group differences, but not from other processes that are reflected in visible attributes with uniform-unbound distributions (Table 7-2).

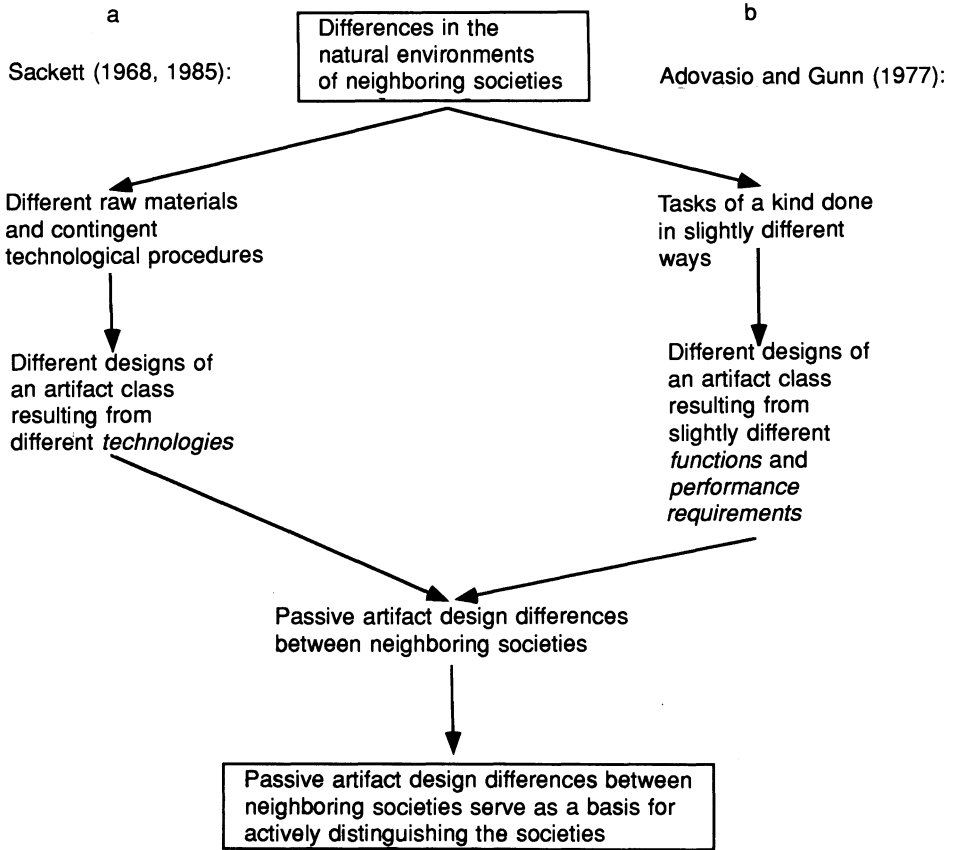


Figure 7-12. Natural environment differences between neighboring societies can cause the design of an artifact class to vary between the societies. One or both of two passive processes of differentiation—technological and functional—may be encouraged by the environmental differences. The resulting, passive stylistic differences may later serve as a basis for active social differentiation.

An inability to always distinguish the two processes of communicating within-group solidarity and communicating between-group differences is expectable. In the creation of ethnic identity, the two processes of creating “us versus them” and creating “us” are closely interrelated and sometimes manifested in the same symbols (Royce 1982), although not always (Hodder 1982a:35).

At the same time, it is important theoretically to be able to distinguish these two processes archaeologically because they may have different causes. They may relate to different kinds of stresses at different scales (Wiessner 1983). For example, communication of within-society cooperation might reflect local, climate-related subsistence risks which require food sharing among communities. In contrast, communication of between-society boundaries might reflect political and territorial tensions. The two processes may also vary in their historical distribution in response to changes in kinds of stresses through time. A possible example of this is given by Roe (1979:197). He notes that the Shipibo of Peru do not know why they use the characteristic style of decorations on their clothing that they do, other than it is traditional (“they have always used these forms”). The maintenance of the style through time may lie in the passive sharing of a history of interactions by the Shipibo and/or the active

use of the style to communicate within-group solidarity. The Shipibo do not think that the style originated to communicate social differences with neighboring societies. Yet, today, in a context of acculturation, these decorations signify Shipibo ethnic identity to outsiders as well as those who wear them.

The third distinction has been made by Barth (1969) and by Hodder (1982a:187, 104). Hodder emphasizes that differences between groups are symbolized only sometimes to communicate their competition in response to ecological stresses (Hodder 1982a:13–36). In other instances, between-group differences are symbolized as a part of the intentions and strategies of competitive subgroups within one or both of the groups (Hodder 1982a:75–86). Distinguishing these two between-group, boundary-creating processes is important because they may have different kinds of causes at the different scales of the region, group, or subgroup. However, both processes are reflected in physically visible attributes with patchy-bounded geographic distributions, and are thus indistinguishable in their material correlates from each other and many other processes.

The fourth distinction, between active personal-level processes and the passive history of a person's interactions, cannot be inferred from the visibility and geographic distribution of design attributes. Both kinds of processes are reflected in attributes of high to low AP visibility with random distributions. This is unfortunate. The distinction is important for finer-scale studies that attempt to understand the social dynamics behind the expression of personal identities (Wiessner 1984), to reconstruct residence rules and patterns of interaction among social segments within sites (Brose 1968; Longacre 1970; Roe 1980; Lathrap 1983), to reconstruct intrasite activity organization (Cahen and Keeley 1980), and perhaps other applications (Hill 1977:57–60).

Other Spatial and Contextual Information

In this section, we turn from the general principles of the unified theory of design to several kinds of contextual data that lie formally outside the theory. These data are essential to using the theory to its full potential in three ways. First, they allow its context-specific parameters to be defined. Second, they allow its basic assumptions to be checked. Finally, they can be used to reconstruct or discriminate the specific processes (Table 7-2) that are indistinguishable with information on only an attribute's spatial distribution, AP visibility, and position in a decision hierarchy and production sequence.

Data that are useful for these purposes include the following: (1) characteristics of the contexts of production, use, display, and deposition of the artifact class, including the kinds of intrasite proveniences and settlements in which its various attribute states occur; (2) the source(s) of the material from which the artifact class was manufactured; (3) the labor invested in the manufacture of the artifact class; (4) the degree of curation of the artifact class; (5) whether prototypes that might otherwise be used for learning were purposefully destroyed periodically; (6) regional–ecological, raw material, and culture–historical provinces within the study area; (7) the regional, ecological–adaptive milieu, including natural environmental, demographic, political, and economic stresses and opportunities; (8) within-group social organization and ideology; (9) culture history; (10) the differing distributions of multiple versus single artifact classes; (11) rates of attribute change through time; and (12) patterns of covariation among attributes within an artifact class through time (Winters 1968:177–202; Braun 1979:67,69–71; Hodder 1982a; Wiessner 1985; McGuire 1988:95–98; Carr and Maslowski, Chapter 9; Rosenthal, Chapter 10; Plog, Chapter 11).

Examples of the context-specific parameters of the unified theory of design that these data can be used to infer are: the size and composition of potential audiences; viewing distances and the absolute contextual visibility of attributes; the degree of continuity in the enculturation of crafting techniques and stylistic patterns across generations and among fissioning social groups; the nature of the social situation of artifact use and display; probable message priorities; and the degree of spontaneity during artifact production.

Information on the context of artifact use and display affords especial insight into communica-

tion processes when it allows audience characteristics and the nature of the social situation, not simply viewing distances (Braun, Chapter 5), to be known. An understanding of the general ideological, social, political, economic, emotional, motivational, and functional characteristics of the social situation in which an artifact is used or displayed permits one to predict the kinds of messages, if any, that are most likely to be encoded in the artifact, the probable value of the messages, and their likely priority for expression. Examples of the characteristics of social situations that determine message relevance, value, and priority are listed in Table 7-8, above. Some examples of social or personal messages that are so determined include social identities and roles, socially recognized emotional states of being, religious or mythological information, differentiation, affiliation, cooperation, negotiation, competition, coercion, rejection, regulation, or ownership (Table 7-2).

Examples of basic assumptions of the unified theory that the above data can be used to check include: raw material uniformity over the research universe, the lack of artifact exchange, localized group mobility, and the eight assumptions behind the ecological–evolutionary argument for a cross-cultural relationship between the AP visibility of an attribute and the inclusiveness of the social unit that it reflects (see pp. 204–205).

Distinguishing Processes. A number of authors have convincingly argued or illustrated the utility of some of these kinds of contextual data in reconstructing and distinguishing among the processes and constraints listed in Table 7-2. Three of the four important pairs of processes that were discussed above as having ambiguous design and geographic distributional correlates can be distinguished with contextual data.

First, the active communication of social identity through iconographic style can be distinguished from the passive group sharing of a history of interactions that results in isochrestic patterning. This can be done using two kinds of data (Wiessner 1985:162–163). Whereas iconographic styles that communicate social identity are susceptible to fashion swings through time, the isochrestic patterns that result from the passive sharing of interactions by a group tend to remain stable. Also, whereas iconographic stylistic attributes are likely to exhibit numerous local patterns of covariation that shift over a region, isochrestic attributes can be expected to covary in a consistent pattern over a region, in line with traditional norms. Plog (Chapter 11) has elaborated this argument to allow some finer processual distinctions to be made.

Second, the communication of between-group differences and boundaries can sometimes be distinguished from the communication of intragroup cooperation and solidarity. This can be done by documenting the different distributions of styles of several different artifact classes, by considering their contexts of use, and by evaluating the competitiveness of the adaptive milieu. Hodder (1982a:35) has illustrated this. Geographic variations in the attributes of a single artifact class often do not bear enough information to accomplish this task. In part, this difficulty arises from the fact that intragroup solidarity can be codified in different kinds of artifacts by adjacent societies. Moreover, the selected artifact classes need not be obvious complements (Eidheim 1969:40). Rosenthal (Chapter 10) has concluded the same.

Third, the communication of boundaries between groups to express their competition or differentiation can sometimes be distinguished from the active communication of boundaries between groups as part of the strategies of competitive subgroups within them. Hodder (1982a:75–86, 104, 187) has illustrated this. This discrimination requires the contextual study of multiple kinds of artifact classes for both their intrasocietal and intersocietal geographic distributions. It also requires contextual information on the regional ecological adaptive milieu (e.g., economic and demographic stresses), within-group social organization, and sometimes within-group ideological structure. The latter is necessary when the communication of between-society boundaries, as a product of intrasociety tensions, is played out within the constraints of the dominant principles of symbolic meaning and the world view of the society (Hodder 1982a:125–184).

Finally, Carr and Maslowski (Chapter 9), Neitzel (Chapter 12), and Morris (Chapter 13) have all

illustrated how considering the varying settlement types within which multiple kinds of artifacts or attribute states occur can be useful in identifying and discriminating among the processes that cause styles.²⁹

In sum, contextual data of the kinds just discussed are essential to most analyses of artifact design. Although these data lie formally outside the unified theory of artifact design, they are critical to its appropriate and full application. They are also useful for reconstructing and discriminating among processes that the unified theory cannot distinguish.

AN ANALYTICAL STRATEGY FOR APPLYING THE UNIFIED THEORY OF ARTIFACT DESIGN

The purpose of the unified theory of artifact design, as a middle-range theory, is to assign potential etic meanings to the design attributes of a class of artifacts. Possible etic meanings include processes and constraints that are technological, sociocultural, social psychological, personal behavioral, personal psychological, personal physiological, panhuman depth-psychological, and panhuman physiological in nature (Table 7-2). This "identification" process (Binford 1977) is important. The potential meanings that are assigned to attributes can be used as a basis for selecting for analysis a subset of attributes that are most likely to be relevant to the kinds of processes, constraints, and/or social units that are of interest. The probability of analytic concordance between the phenomenon of interest, selected data, and theoretical goals is thereby increased.

Applying the unified theory of artifact design for these purposes involves several steps, as follows.

1. *Defining a Homogeneous Population.* The population of artifacts to be analyzed should be restricted, initially, to those that are similar in their material and their utilitarian function, and that have comparable attributes and attribute states. There are two reasons for this restriction. First, the unified theory assumes that the attributes to be analyzed comprise a single, coherent system. It is the constraints that attributes come to pose on each other as a physical, formal, logical, technological, syntactic, and semantic system during the production of an artifact for its use and display in a set range of contexts that lead to a systematic ordering of attributes by visibility, decision, and production criteria, and the relevance of that ordering to causal processes and constraints (Carr, Chapter 6). Second, when material and function are held approximately constant, variability attributable to personal, social, and socially relevant technological variation can become the focus of analysis.

2. *Selecting Attributes.* Some stylistic studies aim at understanding much or all of the design of an artifact class and its many determinants. Others aim at identifying and measuring a select range of processes and constraints reflected in some targeted subset of the design of an artifact class. In either case, it is important to begin analysis with a selection of attributes that vary widely in their visibility, decision order, and production order and that, to the extent possible, represent the "total design" of the artifact (Carr, Chapter 6). This is necessary for subsequent steps to be effective. In particular, by exploring and comparing the nature of diverse attributes to each other as a system, the many possible mappings between attributes and their causes can be narrowed to a more limited array. Diverse

²⁹For example, Carr and Maslowski (Chapter 9:Table 9-6) found that a suite of attributes of Hopewell mortuary weavings distinguished geographic areas, regardless of whether the mortuary facilities were major earthworks or minor mound sites. In contrast, one attribute distinguished major earthworks and minor mound sites for each of several geographic areas. Given these contrasting spatial–stylistic patterns, as well as the differences between earthwork and mound sites in the elite items that they contained, the first suite of attributes was interpreted as reflecting ethnic or local group distinctions. The latter attribute was interpreted as reflecting panethnic social stratification.

attributes must be compared for their hierarchical relationships (Table 7-1), geographic distributions, and contextual variations, each in light of the bridging arguments of the unified theory, in order to infer their possible meaning(s). This exploratory process is analogous to calibrating the scale of an instrument before using it to measure: the full scale must first be surveyed and defined.

3. Defining Relevant Attribute States. The alternative states that each descriptive attribute can assume must be defined explicitly. Alternative attribute states must represent alternative decisions in the manufacturing process that are equivalent in their utilitarian function—what Sackett (1982, 1985) calls “isochrestic variation.” This is necessary to accurately establish the visibility, decision, and production step hierarchies. Plog (1978:161; 1980:40–44) has summarized some additional basic reasons for why attribute states must be defined in this way, and the interpretive consequences for not doing so.

The scale of measurement and level of generality of an attribute's states must be defined such that the visibility and decision order of the attribute is relevant to the processes or constraints of interest (see pp. 186–188, 222–223, 240–241). For example, fabric material might be coded as plant versus animal or by species. Often the appropriate scale and level of generality cannot be known a priori. Several exploratory analyses and/or several analytic cycles of attribute definition, pattern searching, and interpretation may be required to find the scale and level of generality that reveal geographic and contextual data patterns clearly relevant to the process of interest (Carr 1985:18–44).

4. Ordering Attributes. Attributes are next ordered hierarchically according to their visibility and their positions in the manufacturing decision hierarchy and production sequence. Ordering attributes by these criteria allows the attributes to be linked to a range of potential general etic meanings (Table 7-1), using the many bridging arguments on form–process relationships presented above.

Attributes should always be ordered first by their AC or AP visibility levels. The visibility of an attribute is the primary dimension that determines the kinds of processes that it can reflect.

The AC visibility of attribute should be estimated to the extent possible and used instead of their AP visibility to characterize and order them. It is an attribute's AC visibility, which summarizes both physical and contextual conditions, that ultimately restricts the kinds of processes that the attribute can reflect. Table 7-5 provides the physical and contextual conditions that are important to consider when estimating AC visibility. Of the contextual conditions, approximate viewing distances, the openness or closure of the context of viewing, and the number of viewers are especially critical.

Once attributes have been arranged into a hierarchy by their visibility, their order then can often be substantiated and refined by their decision order and/or order of production. The relative usefulness of the decision and production step hierarchies in ordering attributes and in bridging them to causal processes and constraints will vary from case to case. The situation depends largely on the medium, whether the decisions in the decision hierarchy were made sequentially or simultaneously, and whether the decisions were made hierarchically, as a complex network, or in multiple independent sequences. These qualifications are largely inferrable from the artifact's technology.

If most decisions were made sequentially and hierarchically and, consequently, do not have tied ranks, the decision levels of attributes will correlate strongly with their visibility levels. In this case, the decision order of attributes is useful for substantiating and refining their order by their visibility. This situation is typical of artifacts that have been manufactured by subtractive processes (Table 7-11). In contrast, when the decision hierarchy is dominated by simultaneous decisions, or is a complex network of multiple independent sequences, many decisions will have tied ranks. In such cases, decision level is not as useful for substantiating and refining the order of attributes by their visibility.

It is essential to use the decision level of attributes as well as their visibility to order them when tied decisions are few and when the attributes are highly to moderately visible and, thus, potentially communicated messages. This is necessary because both the visibility and decision levels of an

attribute constrain its communication potential and message content, but in different ways. The visibility of an attribute, and especially its size, set the distance from which it can be seen, the potential size of the viewing audience, and thus the social situations in which it can effectively communicate messages. The decision order of an attribute limits both its size and form, and the degree to which form can be tailored to message content. When several attributes are similar in their visibility, then their decision level becomes critical for ordering them and inferring the kinds of messages that they might communicate.

The position of attributes in the production sequence can be used to substantiate and refine their order by visibility and decision criteria when these three hierarchies correlate strongly. When attributes differ subtly in their visibility levels and when their decision levels are unclear, their order of production can clarify their decision level, providing that decisions were made sequentially. For example, overlap in the painted lines of a decorative pattern may reveal their production order and probable decision order, if decisions were made sequentially.

5. Assigning General Etic Meanings to Attributes. On the basis of an attribute's hierarchical order, absolutely and relative to other traits, the attribute is next assigned a range of general possible meanings, as shown in Table 7-1. More visible attributes have the potential for reflecting a wider range of processes and constraints.

6. Refining Meanings by Evaluating Spontaneity. The potential etic meanings of attributes can be refined by considering the probable degree of spontaneity with which they, and the artifact in general, were produced. Spontaneous production encourages the active, conscious communication of personal messages, expression of personal preferences, and the active projection of personal or depth-psychological imagery from the unconscious mind. Active or passive conventions of the artisan's society, the traditions of fellow, interacting artisans, and personal habits are less likely to be reflected in spontaneously produced attributes.

The degree of spontaneity with which attributes were produced can be assessed only partially from conditions that are inferred easily with archaeological evidence. Two such conditions are useful. First is the relative directions of the production sequence and decision hierarchy. This determines the degree to which the artisan must have envisioned the endproduct in detail before or early during its production. Second is the extent to which decisions about attributes were made simultaneously or sequentially. Other factors that affect the spontaneity with which attributes are produced can rarely be known archaeologically. These include which if any attributes may have inspired production, cultural values about creativity, and the artisan's predisposition to creativity.

7. Refining Meanings with Geographic and Other Contextual Information. The processes, constraints, and/or social units that attributes might reflect can be defined more specifically by considering their position in the hierarchy of geographic areas over which attribute states are distributed, the forms of their distributions, and the many kinds of spatial and nonspatial contextual information enumerated above. For example, the distinction between isochrestic patterning that results from the passive group sharing of a history of interactions, and iconographic style that actively communicates social identity, might be made at this juncture on the basis of the temporal variation and covariation of attributes. In addition, any attribute patterns that are found archaeologically can be interpreted by comparing them to close ethnographic analogs.

8. Checking Assumptions of the Unified Theory. Contextual data should be used at this point to check whether the assumptions made in the bridging arguments of the unified theory apply to the artifact class under study. These assumptions include the eight made in the ecological–evolutionary argument for a cross-cultural relationship between the AP visibility of an attribute and the inclusiveness of the social unit that it reflects (see pp. 204–205). They also include the several assumptions

made in arguments that link distribution scale and form to determining processes (e.g., raw material uniformity over the research universe, no artifact exchange, localized group mobility; see pp. 239, 241). If any assumptions are not met, their manner of exception may be used to suggest possible alternative, expectable relationships between material patterns and determining processes.

9. Refining Meanings by Defining Message Priorities. The distribution of specific kinds of messages (Table 7-2) among attributes of various hierarchical levels can be inferred by reconstructing, to the extent possible, the priorities that those messages might have been given for expression in the society under study. Priorities that are constant over the society at large, that vary with consistency among different kinds of social situations, and that vary more freely over the short-term within and among social situations, should be considered.

Several kinds of contextual data are useful for deducing such message priorities. These include the ecological–adaptive, ideological, political, social, emotional, motivational, and functional characteristics of the contexts of artifact use and display (e.g., sacred/profane, public/private; Table 7-8). Contexts of several scales should be evaluated for these conditions, including the region, the society, and various social situations, over both longer and shorter durations of adjustment and selection.

10. Refining Meanings by Considering Multiple Artifact Classes. A final way in which the etic meanings of attributes can be refined is by contrasting different artifact classes to each other for the patterns of geographic distribution and contextual association of their attributes and attribute states. Insight can also be gained by considering the different patterns of distribution and association of the artifact classes themselves.

There are several reasons for progressing beyond the analysis of a single artifact class to multiple classes. First, artifacts of different classes and media may differ in the sociocultural and other processes that they reflect. This phenomenon is what Roe (Chapter 2) calls the “semantic weighting” of artifact classes. Semantic weighting occurs in part because different kinds of artifacts vary in their scale, AP visibility, decision structures, rarity, durability, malleability, portability, and many other qualities. These differences, in turn, influence the function(s) of the artifacts, their contexts of production, use, display, and disposal, and, thus, how they articulate with and become a part of ecological, social, personal, psychological, and physiological processes. Different media and classes may reflect different processes also as a result of simply the vagaries of culture history. Thus, no one artifact class reflects all of the hierarchy of processes (Table 7-2) that its attributes potentially could. Instead, artifact classes complement or reinforce each other in the processes in which they participate as they function together as a system. As a consequence, it is possible to gain a perspective on the processes that each artifact more probably reflects by considering how different artifact classes correlate or contrast in the distributions and associations of their attributes and attribute states. Morris (Chapter 13) demonstrates the utility of this tactic by contrasting the distributions of attributes of different artifact classes. Neitzel (Chapter 12), Hodder (1982a:35), and Wiessner (1984:227–228) focus on the contrasting distributions of artifact classes, themselves.

A second reason for studying multiple artifact classes is that different classes may be more or less protected culturally from critical judgment of craftsmanship. Thus, the classes may vary in the degree to which they afford freer experimentation, innovation, and expression of personal conscious and unconscious level processes. Roe (Chapter 2) calls such classes “realms of protected deviation.”

A third reason for analyzing multiple artifact classes is that there can be a shift through time in the particular kinds of artifacts and media in which stylistic elaboration and various kinds of messages are invested. Roe (Chapter 2) calls this process “media displacement.” Tracing and comparing the distributional and associational patterns of artifact classes and their attributes and attribute states through time can give insight into their processual meanings.

A final reason for studying multiple artifact classes is that some processes are usually manifested in only the relationships among artifact classes and can be reconstructed only when multiple classes

are compared. The active institutionalizing of positions of power and privilege in complex societies through a system of covarying and complementary symbols is one such process. Neitzel's (Chapter 12) analysis of several artifact classes of the Chacoan elite illustrates the reconstruction of this process. Another such process is the active expression of a symbolic fabric, configuration (e.g., Benedict 1934; Kroeber 1963) or "essence" (Hodder 1990:47) that integrates cultural life in a society. That fabric may include world views and values, mythological themes and personages, conscious or unconscious metaphoric information about the organization of society and the cosmos, as well as unconscious structural principles such as dualism or triadic dualism. Penny (1983, 1985), Roe (1979:194–195, 1989, Chapter 2), and Rosenthal (Chapter 10) provide examples of the reconstruction of cultural fabrics with multiple artifact classes.

11. Measurement of Processes. Those attribute states, attributes, and artifact classes that appear empirically and theoretically to reflect the particular processes or constraints that are of interest are selected as the optimal measures of them. At this point, middle-range theoretical work is complete and analysis can focus on the states and patterns that relevant attributes or artifact classes take compared to those expected on the basis of some higher-level theoretical framework.

Steps 1 through 9, and 11, are illustrated in detail by Carr and Maslowski (Chapter 9) in an analysis of Ohio Hopewell fabrics.

CONCLUSION

The cross-cultural relationship of design attributes to the processes and constraints that cause them is complex. It is best described as *constrained indeterminacy*. It is not the highly predictable phenomenon assumed by early social interaction theoretists and posited by information exchange theoretists. Nor is it the culturally and historically particularistic phenomenon concluded by Barth and more recently by Wiessner, Sackett, and Hodder. Nor is it the elusive concept that Conkey thought it was.

The unified theory of artifact design presented here and illustrated in subsequent chapters strikes a balance between these positivist–nomothetic and particularistic views of material culture, and bridges them by taking a broader and middle-range theoretic, operational approach. The approach encompasses the tactics and perspectives on design discussed in Chapter 6.

Most basically, the theory broadens the scope of the research universe from the style of artifacts to their design, including all material traits. Likewise, it broadens the range of causal processes and constraints that are considered (Carr, Chapter 6). Technological, social, social-psychological, personal behavioral, personal psychological, personal physiological, panhuman depth-psychological, and panhuman physiological determinants of artifact design are considered.

Integration of these forms and processes into a single predictive framework is then achieved through three steps. First is envisioning an artifact as a hierarchy of attributes. The hierarchy can be defined by criteria that are largely archaeologically observable. These criteria include the visibility, decision order, production order, and geographic expanse of attributes. Second, integration is achieved by envisioning the processes and constraints that can determine an attribute's form, and the social and other units to which they may pertain, as hierarchically arranged. Finally, a large number of bridging arguments that link these hierarchies are drawn. The arguments make explicit the specific kinds of attributes that usually are or are not determined by certain kinds of processes and constraints, taking the medium and technology into consideration. Also defined are the ecological, social, and other contextual conditions under which these relationships hold or do not hold. These bridging arguments and boundary conditions become clear only through the study and comparison of many artifact classes in many media, and many social situations in many societies. Some of these cases have been summarized here.

This broad and integrated approach to material design contrasts with the many recent approaches to “style.” These tend to focus on more limited and differing suites of causal processes and constraints, do not specify the material attributes that are most probably affected by those factors, and, consequently, have been drawn as competing theories. The result has been the unnecessary and artificial theoretical and paradigmatic debates over the social interaction versus information exchange theories, the isochrestic versus iconological viewpoints, and historical–contextual–particularistic versus positivist–nomothetic approaches.

Beyond the concepts of hierarchies and mapping relations among hierarchies, there are two additional components of the unified theory of design that are essential to bridging process to form and to integrating the positivist–nomothetic and particularistic viewpoints. First is the concept of message priorities. Message priorities and the mapping of messages to form are given some cross-cultural regularity by basic physical–perceptual, ecological–evolutionary, and social–psychological constraints. However, message priorities and the mapping of messages to form also vary with the social situation and its ecological–adaptive, ideological, political, social, economic, emotional, motivational, and functional characteristics. These factors introduce indeterminacy and particularism into form–process relationships. Their effects can be accommodated when assigning etic meanings to attributes only through a contextual analytic approach.

A second component of the unified theory of design that is essential to bridging process to form is nested within the concept of message priorities. This is the ecological–evolutionary argument for a cross-cultural relationship between the inclusiveness of social units, their structural vulnerability to external stresses, and the cultural value consequently given to these units and their messages. This argument is based on Slobodkin and Rapoport’s more general systems theory of ordered sequences of adaptation. It is primary in accounting for cross-cultural regularities between the visibility of attributes and the kinds of messages that they may convey. At the same time, the argument considers various causes for exceptions: the prosperity of the system, localized short-term stresses, cultural values, self-serving social groups, the coming and going of social–structural poses and roles with the social situation, and changes in role ambiguity with the social situation. Accommodating these factors, too, demands that a contextually sensitive approach be used when assigning etic meanings to attributes.

At a more operational level, the unified theory of artifact design helps the archaeologist to select relevant design attributes for analysis. Only some kinds of design attributes are likely to reflect and give insight into a given process or constraint of interest. The unified theory specifies which kinds of attributes these are likely to be, according to their visibility, decision order, production order, and geographic distribution.

In meeting its operational goal, the unified theory goes beyond the decontextualized approaches to material style taken by traditional archaeology and the New Archaeology. These schools of thought saw styles as direct “indicators” or “correlates” of social units or cultural subsystems. In contrast, the unified theory bridges attributes to social units through the dynamic processes that define and maintain those units (Table 7-2) and through the contextual constraints and conditions which, in turn, mold those processes (Table 7-3; Carr and Neitzel, Chapter 1: Table 1-1). The latter include the historical and adaptive milieu, characteristics of the social situation, cultural values and themes, group and personal preferences and motives, and so on. These factors constitute the rich contexts of human decision making and action in the production, use, display, and disposal of artifacts. In this way, the unified theory is a contextualized approach to style.

At the level of definition, the unified theory as a middle-range theory makes the careful conceptual distinction between causal processes in the systemic domain and resultant forms that function or occur in either the systemic or archaeological domains. The theory defines style in terms of archaeological observables rather than processual intangibles. By doing so, the theory discourages implicit tautologies that have crept into current archaeological discussions.

The unified theory also defines and distinguishes several other concepts: decisions versus production steps and design grammars; decision structures of many kinds; several kinds of attribute

visibility; and the conscious–unconscious dichotomy versus the active–passive dichotomy. The analytical utility of the contrast between additive and subtractive technologies is also evaluated.

Finally, the unified theory of artifact design, as well as the subsequent chapters that illustrate its application, point to the detailed understanding of primitive technologies, crafting processes, and raw materials that the archaeologist must have to assign etic meanings to design attributes. Relationships between form and process are structured to a considerable degree by technological (procedural, raw material), and logical–formal constraints. These constraints largely determine the decision level, production order, and visibility level of attributes and, thus, the range of behavioral and other meanings that they can assume. As Sackett correctly stresses, style is embedded in technological decisions. At the same time, assigning detailed etic meanings to design attributes requires an appreciation of the local ecological, ideological, political, social organizational, social-psychological, emotional, motivational, and functional contexts within which actors and material culture operate. We must become closer to both the artforms and the lifeways of the people that we study.

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Chapter 8

Basketry of Northern California Indians

Interpreting Style Hierarchies

JOHN PRYOR AND CHRISTOPHER CARR

Archaeologists have defined style in a variety of narrow manners. Each definition has focused on a different, limited set of determining processes, some more active (e.g. Wobst 1977; Hodder 1982; Wiessner 1983), others more passive (e.g. Longacre 1964; Hill 1970; Sackett 1977; Hill and Gunn 1977). In contrast, the goal of this chapter is to help develop a more unified understanding of style that encompasses all determining processes and that integrates the various past views of it.

Toward this end and paralleling other chapters (Roe, Chapter 2; Carr, Chapters 6, 7; Rosenthal, Chapter 10), we make several suggestions for conceptual and analytical synthesis. First, we widen the definition of style to include those aspects of material culture that reflect any of the broad continuum of active to passive processes shown in Table 8-1. By active stylistic processes we mean those that are or can be directly controlled by the individual artisan. These include the well-known general processes of messaging, as in the stylistic communication of group membership within and between groups or among individuals. However, active processes also include the manipulation of power relations between high- and low-status individuals or families. By passive stylistic processes we mean those that are less directly controlled by the artisan. These include processes that result from social organizational, symbolic organizational, or historical constraints at the cultural or family levels; uncontrollable technological constraints; personal biological limitations or motor skills; psychological constraints; and other constraints on style content of which the artisan is not aware.

The second suggestion we make for synthesis is that multiple processes or constraints can affect the style of the same medium or item. Also, different processes or constraints tend to operate at different sociocultural and geographic scales, and to influence different stylistic attributes, which vary in their physical and technological characteristics. These patterns we illustrate through the analysis of ethnographic and museum data on the styles and the determinants of styles of northern California Pomo Indian baskets, which were studied by Pryor (1987a) for his dissertation research. Stylistic

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**Table 8-1. A Continuum of Some Active and Passive Processes
and Constraints That Affect Style, and That Are Considered in This Chapter**

<i>Active processes</i>
Ethnicity
Between groups: boundary maintenance (Wobst 1977)
Within groups: promotion of solidarity (Wiessner 1983)
Active interaction: the conscious attempt of an artisan or group to integrate with another group through stylistic mimicry.
Negotiation of social status relations among families: using style to establish and reassess relationships between families, as opposed to the better known process of using style to reinforce or resist status relations among individuals (see below in table). The process is illustrated in California Indian gift baskets (Pryor n.d.), and has a function similar to the potlatch among Northwest Coast Indians.
Negotiation of status relations between individuals outside of the family
Reinforcing high status (Wobst 1977)
Resisting high status (Braithwaite 1982; Hodder 1984)
Intrafamily power relations: power relations among family members, especially the old and young
Individual artisan's inspirations
<i>Passive processes</i>
Shared culture history
Artisan's personal preferences
Passive interaction: casual learning and diffusion of aspects of style through the contact of members of two groups.
Closely interacting artisans (Friedrich 1970)
Less personal interaction (Pryor 1987): When a style is borrowed through casual interaction of groups, it can be filtered and modified by (a) feelings of group identity and (b) beliefs about which groups from whom it is appropriate to borrow (McGuire 1981).
Personal history of the artisan and their family as a summary of lifetime interactions
Enculturation (Hill 1970; Longacre 1964)
Motor skills (Hill and Gunn 1977)
Technology of construction and raw material constraints
Raw material availability, in some environments

patterns at four socio-spatial levels of integration will be presented: the individual, family, community, and sublanguage group. A similar spatial research design was used by Wiessner (1983).

Table 8-2 lists the processes and constraints that one might theoretically expect to operate at each socio-spatial level and those that were found empirically to affect basket style in this case study. A brief summary of these empirical patterns follows, in order to provide the reader with a general, guiding perspective for considering the more detailed documentation presented below.

At the level of the individual artisan, the weaver's preference for certain designs, forms, and materials used in basket construction proved to be an essential determinant of basket style. These are the attributes that Pomo basket weavers, themselves, use to identify the makers of baskets. Motor skills are another important factor.

At the level of the family and interacting artisans, several processes were found to have an important effect on basket style. (1) Enculturation is most basic. The data to be presented show that the closest stylistic links within the family appear to be between mothers and the daughters to whom they taught basketry. (2) Intrafamily power relations are also significant. They take two forms. First is the unequal power relation between the high-status, older teacher and the low-status, younger student. Second are the power relations between in-laws, which encourage or discourage stylistic transmission across the semipermeable social boundaries between families. (3) The effects of passive interaction are also evident. As social distance between Pomo artisans increases and their opportunities for interaction lessen, their basket styles become less similar. (4) The personal history of

Table 8-2. Some Processes and Constraints That Affect Style at Various Levels, and That Are Considered in This Chapter

Level	Process or constraint
Individual level	*Artisan's personal preferences *Artisan's personal inspirations *Artisan's personal motor skills Technology of construction
Family and interacting artisans level	*Enculturation *History of the family and its members as a summary of lifetime interactions *Power relations between teacher and student within and outside of the family *Passive interaction *Technological dependency of design on weave, and its impact on enculturation
Community level	Between-group ethnicity, where boundary maintenance is important *Within-group ethnic solidarity Negotiation of social status relations among families Negotiation of status relations among individuals outside of the family Technology of construction
Language group and sublanguage group	*Shared culture history *Passive interaction *Active interaction *Technology of construction *Raw material availability in some environments

*Factor found to operate in this study of Pomo Indian baskets.

contacts of a weaver with other weavers or their products affects her basket style during and after she learns the basics of weaving from her mother or grandmother. (5) The technological limitation of design execution and basket shape by weave pattern can constrain the basket styles produced by a weaver. A weaver can be cut off from some of her mother's repertoire of designs and basket shapes if she does not learn all of the weaves that her mother knows.

At the community level, ethnicity as a product of both boundary maintenance behaviors between groups and processes that promote solidarity within groups can influence stylistic patterns. However, in this study, only the latter is evident. It appears that Indian communities of the North Coast Range used style more to integrate people than to exclude them (see also Washburn, Chapter 4). This finding is consistent with known hunter-gatherer adaptations, which often stress maximizing kin ties, and supports Wiessner's (1983) interpretation of !Kung projectile point styles. It is possible that boundary maintenance does not become a critical adaptive strategy, and that style is not used for this purpose, until the development of agriculture and extensive food storage made social exclusion and restricted food-sharing important.

At the level of the language group, it appears that the broad stylistic patterns among Pomo baskets are set by shared culture history. However, these patterns are later blurred by passive and perhaps active interactions. Another important factor that affects style at this level is the technology of construction, as predicted by the unified theory of artifact design (Carr, Chapter 7). The availability of raw material as an influential factor was somewhat mitigated among the Pomo by extensive trade.

The stylistic attributes that are affected by these processes vary in their visibility and their placement in a manufacturing decision hierarchy, as defined in Chapter 7. We will explore some of the relationships between attribute visibility, attribute manufacturing decision level, and the construction process, both supporting and extending the unified theory of design in Chapter 7. For example, as predicted, at the level of interacting artisans, the distribution of less visible attributes among the

baskets of friends, half-sisters, in-laws, and cousins accurately reflects social distance and interaction patterns, whereas more visible attributes are sometimes shared more widely. Similarly, at the sublanguage group level, the less visible attribute of weave reflects interaction patterns more consistently than do the more visible attributes of basket shape and design cluster. However, it will also be shown that visible attributes can reflect patterns of interaction when they appear on artifacts that are used in less visible contexts, such as inside the house. Differences in the form of the style distributions of Pomo mush boiler baskets and Kalahari San projectile points illustrate this. Finally, we will show that the hierarchy of decisions involved in planning and creating baskets is not a linear sequence. Rather, it is a complex network of constraints with an overall direction; also, at any single decision stage, multiple decisions about different attributes may be made simultaneously, in a coordinated or independent manner (see also Carr and Maslowski, Chapter 9).

Several other general issues about material style will also be revealed in the course of this essay. First is the role of power relations within and outside the family in determining patterns of enculturation. Enculturation is not a simple process that can be taken out of context when modeled for its effect upon style distributions (see also Roe, Chapter 2). Second, power relations also determine which persons are allowed to innovate styles (see also Roe, Chapter 2). Also, as a result of changes in power relations through the lifetime of an artisan, her or his style is likely to shift. A third general issue is the manner in which the style of a basket is apparently perceived by the Pomo when identifying its maker. Although documentation shows that the Pomo break down the style of a basket into attributes such as material, shape, and design when perceiving it, they also apparently consider attributes in the context of each other in a more holistic, Gestalt-like manner. These attributes may be of several different levels of visibility. Thus, attributes of a greater range of levels than has recently been thought pertinent to some style analyses and has been used in those analyses (e.g., Plog 1978:161) may actually be relevant.

ETHNOGRAPHIC BACKGROUND

The Pomo and neighboring Indians of Northern California, including the Yuki, Huchnom, Wappo, Hill Patwin, and River Patwin, inhabited the North Coast Range of California (Figure 8-1). At contact and until extensive cultural alteration (1880), these groups were complex hunters and gatherers. They were characterized by private ownership of land and resources (Gifford 1923; Stewart 1943), craft specialization (Loeb 1926:176–181), large villages of several hundred to 1,500 people (Kunkel 1962), and population densities as high as 16.7 persons/sq mi (Kunkel 1962:263). In the historic period, they congregated on lands that they bought or that were provided by the government, called “rancherias,” where they blended hunting and gathering with agricultural labor.

The “Pomo” are not a single people. In 1880, California was occupied by a patchwork quilt of mutually unintelligible language groups. “The Pomo,” themselves, spoke seven distinct but related languages: Southern Pomo, Southwestern Pomo, Central Pomo, Northern Pomo, Eastern Pomo, Southeastern Pomo, and Northeastern Pomo (McLendon and Holland 1979:106) (Figures 8-1, 8-2). Each language group was composed of a myriad of small, autonomous political units called *tribelet*s (Kroeber 1932:259) (Figure 8-1). Solidarity was felt only within the *tribelet*, not the language family or language group (McLendon and Holland 1979:106). Although the language groups were culturally similar, there were differences among them as well (McLendon and Oswalt 1978:275). This patchy distribution of political and linguistic groups makes this area interesting for investigating stylistic variation.

Pomo Baskets

Pomo baskets proved to be fruitful for investigating style in two ways: they are decorated and they played a prominent role in Pomo society. Baskets were very important in Pomo subsistence

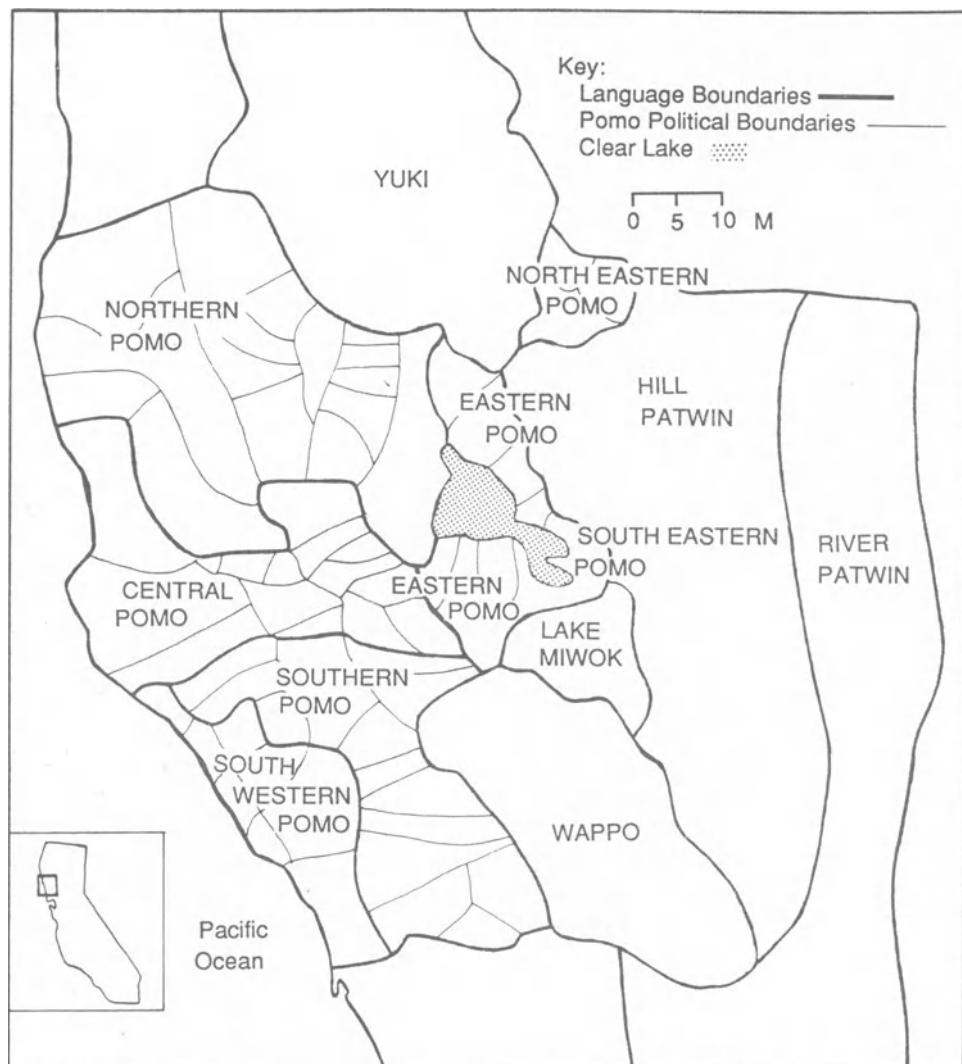


Figure 8-1. Language groups of California and Pomo tribelets of the North Coast range.

activities. They were used to collect and transport acorn and grass seed staples; to trap fish, field mice, rabbits, ground squirrels, quail, dove, and other small birds; and as granaries to store foods. Acorns were ground to flour using basket hopper mortars placed on top of mortar stones. The flour was then sieved through a basket, and in some cases, leached, cooked, served, and eaten in baskets. Grass seeds were winnowed, stored, parched, ground, sifted, cooked, and eaten with baskets. Water was kept in watertight baskets and drunk with a basket cup. Many of these baskets had specialized forms and characteristics for their specific functions (McLendon and Holland 1979:113).

Baskets literally surrounded a Pomo Indian from cradle to grave. Newborn babies were washed in a special basket. Small children were carried about and spent most of their early years in a cradle basket. Young girls were given toy baskets to play with and, at puberty, were given a special basket

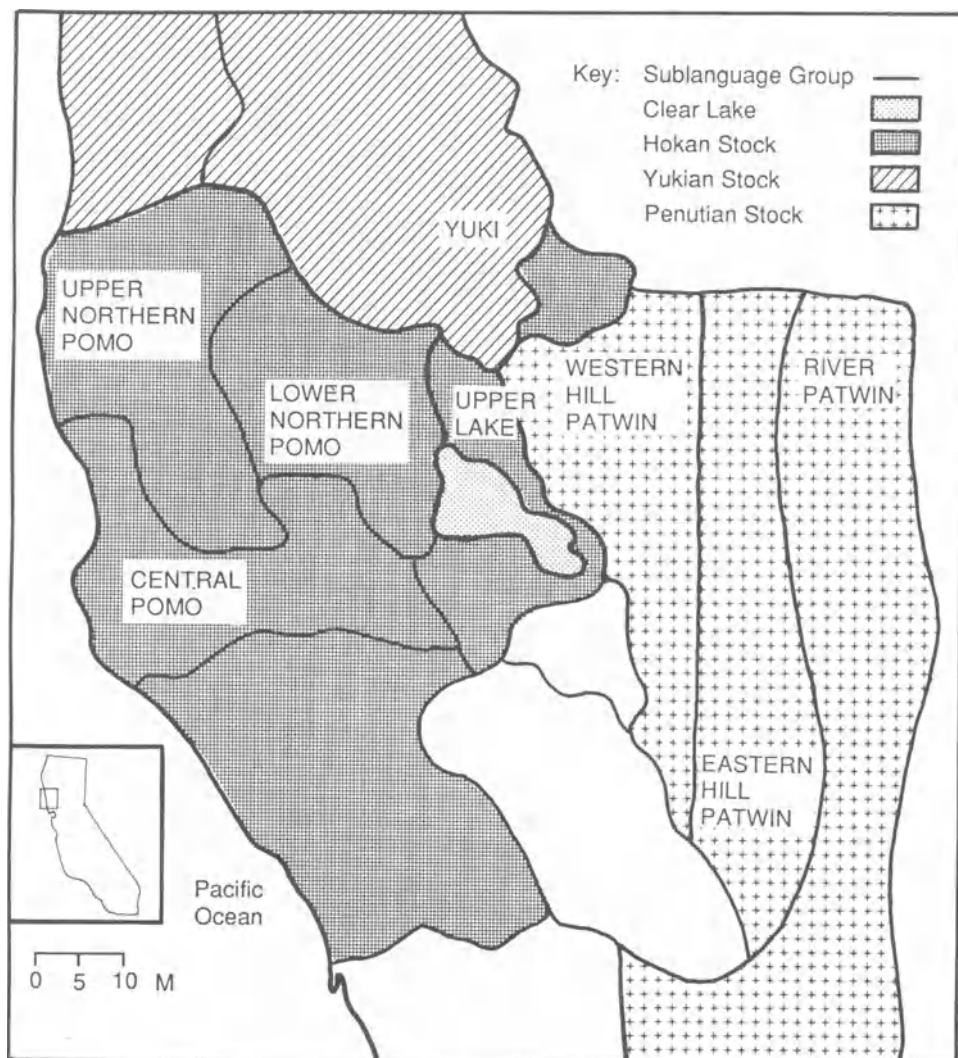


Figure 8-2. Sublanguage groups and their language stocks in the study area.

with which to wash themselves. Gift baskets that were exchanged between families at birth, at weddings, and at death were of central importance and highly decorated. At weddings, they were given by the wife's family to the husband's family. At death, they were thrown on the funeral pyre by family and friends of the deceased (McLendon and Holland 1979:113–115) or, more recently, buried with the deceased.

Baskets were made predominantly by women, although men made some coarse utilitarian baskets. Only women made decorative baskets (Gifford 1923:327; Loeb 1926:176). At contact, all women wove baskets (Gifford 1923:327) but not with equal proficiency. The best basket makers seem to have been in certain families. This variation of proficiency was accentuated by the elaborate nature of Pomoan basketry. Baskets were woven with numerous weaves or weave combinations and

decorated with patterns woven into them, as well as with beads and feathers. Most weavers specialized in one weave and only the best weavers mastered all weaves (McLendon 1981:209).

In the historic period, with the adoption of the White man's utensils and containers, there was no longer a need for every woman to make baskets. This added further to the existing differentiation in proficiency: some families continued to make baskets in order to support themselves in part or in full through sales to White basket collectors, whereas other families did not. Today, the young do not seem to be very interested in the tedious processes of collecting and weaving plant materials into baskets. With few exceptions, the best basket makers today are older women.

RESEARCH DESIGN

The Data

The primary data for this study consist of color photographs that Pryor made of 1,222 baskets from 19 museums and 15 private collections. For each basket, the formal and contextual attributes and attribute states listed in Table 8-3 were recorded.

Rich ethnographic data on the Pomo and their neighbors were also consulted (see Bean and Theodoratus 1978:299–304; McLendon and Lowy 1978:318–322; Pryor 1987:18–78; and citations within). The federal censuses of 1880, 1900, and 1910 were used to establish the social relations between rancherias (e.g., marriage patterns), which persons were living on which rancherias, and those persons' places of origin. Also, Pryor conducted an ethnoarcheological project among living basket makers in the North Coast Range in order to better document his photographs and to investigate the views that the Pomo, themselves, had on style and style boundaries. Eight basket makers—including both renowned and less well-known weavers, tribal and spiritual leaders, old and young tribal members, and persons of different ethnicity—were consulted. They are Mabel McKay, Frances McDaniel, Elsie Allen, Ramona McCloud, Joann McCloud, Magie Carpenter, Susye Billy, and Francis Jack.

Formal Basketry Attributes in Theoretical Perspective

In Chapter 7, Carr presents a unified middle-range theoretical framework that links the visibility of formal attributes of material culture, and their placement in a hierarchy of manufacturing decisions, to each other and to many processes that determine such formal variation. The basketry attributes examined in this chapter can be organized within this framework (Table 8-4, Figure 8-3) and used to illustrate and qualify it. In subsequent sections, we will refer to this organization of the data when examining the spatial distributions of basketry attribute states at multiple scales and the processes that determine those distributions.

Following the procedures defined in Chapter 7, basketry attributes can be ranked according to their relative visibility in an unambiguous, sequential manner (Table 8-4). In contrast, ordering them according to their role in manufacturing decisions (Figure 8-3) defines a complex network of dependencies with overall directionality, rather than a simple, single, sequential hierarchical structure. Also, at some single decision levels, multiple kinds of decisions can be made simultaneously, in either a coordinated manner (e.g., raw material and color) or independently (e.g., basket size, body shape, raw material). This decision structure is common to many media, such as painting, drawing, and fabric weaving (Carr, Chapter 7).

The decision structure of basket making is most similar to that of fabric weaving (Carr and Maslowski, Chapter 9). In both media, the states taken by multiple attributes at an earlier decision level can constrain those taken by a single attribute at a later decision level (e.g., the effects of basket size, shape, and weave on body designs). Also, the states taken by a single attribute at an earlier level

Table 8-3. Style Attributes and Attribute States Recorded for Pomo Baskets

Attribute		Attribute states	
Raw material	Redbud		
	Sedge		
	Bullrush		
Form	Spheroid with widest point below rim, but above middle		
	Spheroid with widest point at middle		
	Spheroid with widest point at rim		
	Conical		
	Truncated cone with a hole in the bottom		
	Large truncated cone		
	Small truncated cone		
Weave	Boat		
	Coiled	Diagonal twined	
Design layout	Plain twined	Lattice twined	
	Banded	Covering	
	Vertical	Isolate	
	Diagonal	No design	
Design cluster in body	Star-flower		
	Banded zigzag	Vertical square	
	Banded triangle	Vertical triangle-diamond	
	Banded square	Lightning bolt	
	Covering	Isolate	
	Star-flower crossing	Checkerboard	
Design cluster for starting ^a	Star-flower zigzag	Banded simple line	
	Banded square	Star-flower crossing	
	Banded triangle	Banded simple line	
	Banded zigzag	Checkerboard	
	Isolate		
Design cluster for finishing ^b	Banded square	Banded simple line	
	Banded triangle	Isolate	
	Banded zigzag	Checkerboard	
Design element	Traditional	Newer design elements and/or those	
	design elements:	borrowed from whites:	
	Square	Line	Cross Leaf
	Rectangle	“V”	People Heart
	Quail top-knot	Circle	Animals Club
	Triangle	Dot	Letters
	Zigzag	Star	
Spirit breaks ^c	Presence, absence		
Add-on decorations	Feather		
	Beads		
	None		
Function			
Basket maker’s name			
Basket maker’s language			
Date of basket collection			

^aA starting design is the first design made on the base of a basket. This category is used by weavers (Barrett 1908:153).
^bA finishing design is the last design made on the rim. This category is also used by weavers (Barrett 1908:153).
^cA spirit break, or *dau*, is a break in the repetition of a design or an added element. It is made so that a bad event does not happen to the weaver (Barrett 1908:171, 193).

Table 8-4. Relation of Basket Attributes, Their Visibility, and the Processes That They Reflect

Attribute	Relative visibility	Expected determining process
Color	1	Raw material (e.g., blackroot, and redbud)
Size	2	Social or individual level, active or passive
Body form	3	Social or individual level, active or passive
Body design layout	4	Social or individual level, active or passive
Body design cluster	5	Social or individual level, active or passive
Feather or bead additions	5	Social or individual level, active or passive
Weave	5 or 6	Social level, passive; individual level, active or passive
Body design element	6	Social level, passive; individual level, active or passive
Weaver's mark	6	Individual level, active
Finishing design	6	Individual level, active or passive
Starting design	6	Individual level, active or passive

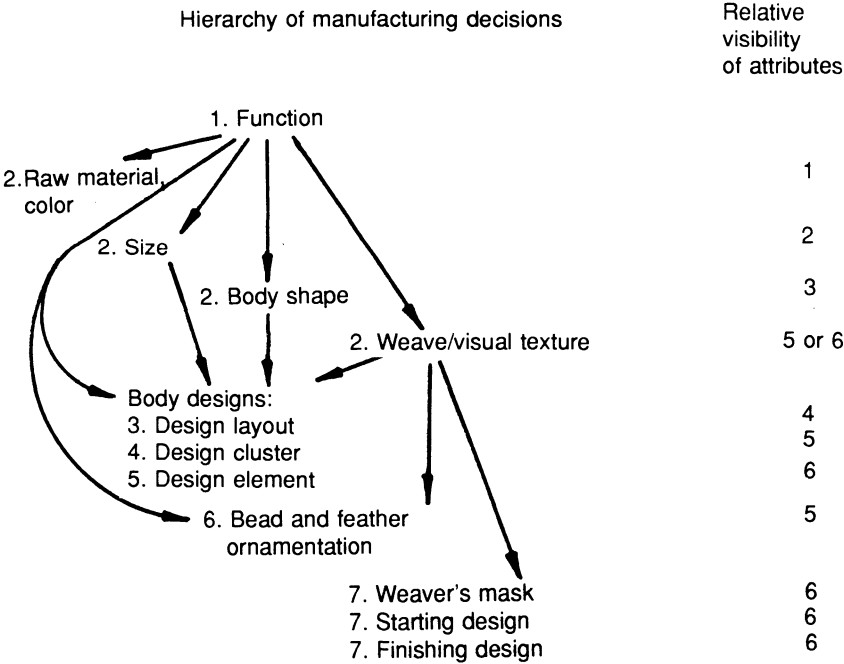


Figure 8-3. Relation of attribute placement in a manufacturing decision hierarchy to attribute placement in a visibility hierarchy for Pomo baskets. The decision hierarchy takes the form of a complex network (Carr, Chapter 7:225–228).

can constrain those taken by multiple attributes at a later level (e.g., the effect of weave upon ornamentation, weaver's mark, starting design, and finishing design). However, in contrast to the structure of decisions in fabric weaving, that in basket making does not appear to involve simultaneous decisions at a single level as commonly. Also, basket making decisions at a single level are independent or coordinated, whereas fabric weaving decisions at one level are often compensatory. Finally, the decision structure of basket making differs from that of cord making, where several globally independent decision paths exist (Carr and Maslowski, Chapter 9).

The unified theory of design predicts that the relative visibility of attributes should correspond approximately with their placement in a decision hierarchy. Although this relationship is found in Pomo basketry, it is not perfect (Figure 8-3). In part, this is so because the relative visibility of attributes defines a linear sequence, whereas their role in manufacturing decisions and constraints creates a complex network. In addition, in some instances, less visible attributes occur earlier in the decision hierarchy than more visible ones. Such anomalies can be found in many other media (e.g., Carr and Maslowski, Chapter 9). Consequently, when predicting the processual meaning of formal attributes and selecting relevant ones for an archaeological or ethnographic analysis of basketry, it would appear that one should rely more heavily on the visibility hierarchy, which relates directly to attribute communication potential, than on the decision hierarchy. Voss and Young (Chapter 3) have come to a similar conclusion, but for theoretical reasons. Table 8-4 shows the range of processual meanings that might be expressed by each basketry attribute considered in this chapter, as predicted by the unified theory.

Some of the dependencies in the decision hierarchy shown in Figure 8-3 are obvious, such as the dependence of the chosen raw material, basket size, body shape, body designs, and added ornamentations on intended function. These relationships are especially clear in the differences between how gift baskets and utilitarian baskets are constructed. Others dependencies require explanation and exemplification. (1) Basket function constrains weave in that only certain weaves are optimal and used for certain kinds of baskets. Burden baskets for carrying things and large storage baskets are always twined, for strength, whereas gift baskets are always coiled, for refinement and decoration. Sifters require an open weave. (2) Weave, and to some extent body shape, constrain the kinds or expression of design layouts and clusters that can be made. For example, on expanding conical forms, and on expanding and contracting globular forms, banded design layouts are easy to produce, whereas covering, crossing, and diagonal design layouts are difficult. The size of design elements or space between design repetitions must be adjusted to the expanding or contracting space. (3) The weave that is chosen constrains whether feathers and beads can be attached. Coiling, rather than twining, is required for these attachments. (4) Weave also limits the kinds of weaver's marks and starting and finishing designs, that can be made. (5) The size of a basket limits the complexity of the designs that can be used; smaller baskets allow less complex designs.

Each of these relationships is found in Pomo baskets and reflects some manufacturing constraint. Other statistical associations, such as the relationship between raw material and weave (redbud baskets are usually twined, whereas black root baskets are coiled), or between design layouts and design clusters, appear to reflect cultural choices rather than manufacturing constraints. Thus, they are not shown in Figure 8-3.

THE INDIVIDUAL LEVEL OF STYLE

In this and the following sections, stylistic patterning at ever larger socio-spatial scales of integration will be discussed. These scales include the individual, family, community, and sublanguage group. For each, both the processes that affect basket style and the basketry attributes upon which these processes operate will be presented.

At the level of the individual, a variety of interacting processes, both active and passive, affect a person's style. The more active factors are an individual artisan's choices within community constraints and norms, and personal sources of creativity within or beyond these constraints. A more passive factor is the weaver's motor skills (Table 8-2).

Artisan's Preference

Individual weavers vary in their preference for certain forms, designs, weaves, and materials. Pryor was able to elicit, from some weavers, their preferences as well as those of past Pomo artisans. For example, Rhoda Knight seems to have preferred to make baskets with the truncated cone form, the quail top-knot, and diagonally stacked triangles covered with the quail top-knot design cluster—"her design" (Figure 8-4a). She also had a strong preference for using black root in her baskets. Rhoda Knight's mother, Nellie White, also chose to make baskets in the truncated cone form, but she preferred to decorate them with the diagonal, plain, zigzag, design cluster (Figure 8-4b). Similarly, Annie Burke liked to use "T" shaped blocks in covering and banded design layouts (Figure 8-4c). The designs are found not only on her plain twined baskets, but also on baskets of a variety of forms and functions: conical burden baskets, globular mush boilers, and tray-shaped plaque baskets. Out of the sample of over 1,200 baskets, this design cluster occurs only on Annie Burke's wares.

Identifying an Individual's Style

Formal preferences of individual weavers are so distinctive that they are able to identify the baskets of other weavers in their own and other communities. For example, in the documentation for the collections of the Mendocino County Museum is a story of how Elsie Allen identified the maker of one of the baskets. After seeing the basket and leaving the museum, she recalled that 8 or 10 years earlier, she had seen a basket with an identical design cluster at the Clarke Museum in Eureka, California. This basket had been attributed to Maude Scott Knight. Allen said that the design on the basket in the museum was "Mrs. Knight's design" and that she had seen it on no other basket weaver's works (Allen n.d.). Elsie Allen and other basket weavers felt that they could readily identify the maker of a basket from its design clusters, materials, and form. These findings are understandable in light of Graburn's (1976:21) work on art of the Fourth World: "In small-scale societies where everything is everybody's business, there is little anonymity, and most people would know the details of style, the aesthetic choices, and even the tool marks of their contemporaries."

When Elsie Allen identifies the maker of a basket, she appears not to isolate and use single attributes of style, but rather a whole constellation of attributes, such as material, basket shape, and design, and their associations, that are preferred by that weaver. This tends to support the view that Pomo weavers do not perceive and interpret style simply by breaking it down analytically into discriminating attributes. Rather, they also perceive it in a Gestalt-like manner, in which each attribute serves as a context for the others and provides meaning through this association. Thus, the whole constellation is considered. Attributes of several levels of visibility and their association may be involved (see also Washburn, Chapter 4). Analytical and Gestalt perception both occur—in either a simultaneous or alternating manner.

This possibility is significant for archaeological analysis. It may mean that attempts to interpret single attributes as reflecting the individual or certain social units (e.g., Wobst 1977; Wiessner 1983) are less likely to be successful than multivariate analyses. Also, the pertinent attributes may have several different levels of visibility—a situation accommodated by the unified theory of design (Carr, Chapter 7) and social-psychological theory (Voss and Young, Chapter 3), but not recognized in the earlier analytic strategies of Wobst (1977), Plog (1978, 1980), and Voss (1982). In the unified theory of design, attributes of multiple visibility levels are seen as having the potential to reflect the individual.

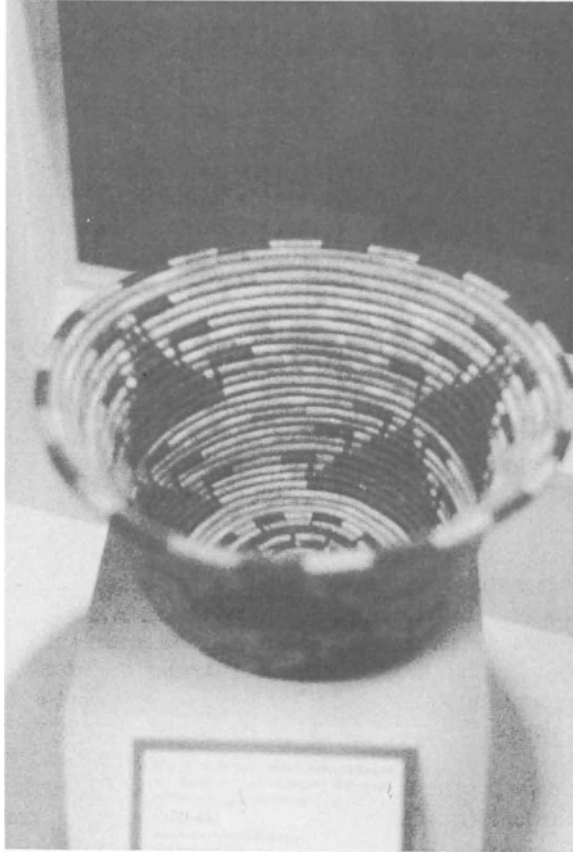


Figure 8-4. (a) Rhoda Knight's design. (b) Nellie White's basket. (c) Annie Burke's "T" design.

In contrast, Plog (1978:161) for example, suggested that attribute frequency analyses should be restricted to design attributes that are alternative choices and of one level in a design (visibility) hierarchy.

It is also important that in order for a basket to be recognized as the product of a specific individual, the basket would have to stand out only at that particular time and space, rather than in relation to baskets of distant places and times. Thus, an *individual's* style is not necessarily *unique* at a larger time–space scale. Also, one would not expect an individual to recognize the styles of all other persons at this larger scale, nor did Pryor find this for the Pomo. This supports Wobst's (1977), and Voss and Young's (Chapter 3), discussions of the maximum geographic scales over which styles are recognized and operate in messaging.

Temporal Variation in an Individual's Style

There is both continuity and change in a basket maker's preferences over time. Repetitive use of form, material, and design makes intuitive sense. It is hard to imagine that a basket weaver would start fresh with every new basket, making each one entirely different from the last, even with the great

b



c

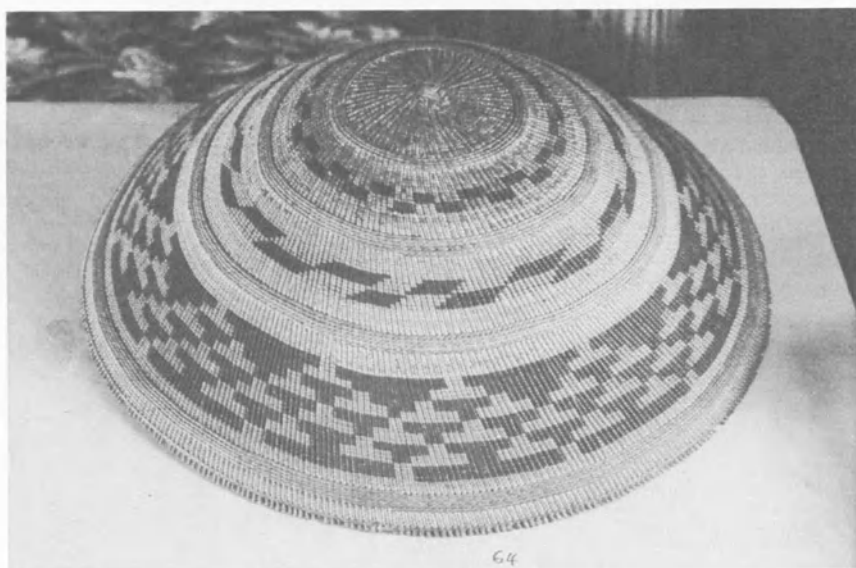


Figure 8-4. (Continued)

diversity shown by the Pomoan weavers. Rather, basket weaving is a process of growth and learning in which each basket is part of a progression of the baskets produced, influenced by the ones made before and influencing those to be made in the future. New weaves and designs are tried and perfected. Certain designs, forms, and material choices are found to work together and are repeated, whereas others do not and are abandoned (see also Roe, Chapter 2).

Preference of weave, design, and form develop throughout a weaver's life not only by personal choices, but also in response to outside forces. The personal style of a basket weaver involves a dynamic between her own creativity, and family and community norms and constraints (see also Roe, Chapter 2). Thus, style must be understood, in part, as the effect of an *interaction* between individual, family, and community level processes, rather than a simple composite of their effects. Among the key external variables that are involved in this dynamic are: (1) power relations between the artisan and members of her family and community, who teach her basketry, and (2) mortuary practices which required the burning of baskets and, thus, the models that they provided with the death of their maker.

Changes in the ages of the persons within a basket maker's family, and the power relations among them, over the artisan's life were integral to her acquiring and shifting in her personal style. The Pomoan household was composed of the young, parents, and grandparents. Parents were primarily the subsistence producers, whereas grandparents taught the young. Elders slowly and carefully doled out their knowledge because, in Pomoan society, the power of the old was in the knowledge that they controlled. Initially, the teaching of basket making can be seen as a negotiation between teacher and student. The teacher gained power and respect, and the student gained a valued skill. However, the young weaver was at a distinct disadvantage in these negotiations because the teacher was usually a grandmother or mother. She taught weaving as a serious business, even citing spiritual sanctions for breaking any taboos related to weaving. Stylistic innovations were squelched by ridicule and teasing. As a result, the young weaver gave up much of her stylistic freedom.

As the student grew older, the power relations shifted from those of student and teacher to the more equal relations of closely interacting artisans. This allowed a freer flow of innovations and ideas. When the older generation of weavers within and outside the family died, their baskets were to be burned with them on their funeral pyres (see p. 280). This wiped clean the stylistic slate—what Roe (Chapter 2) calls “cultural amnesia”—and encouraged innovation. It freed the now middle-aged weaver to create her own style of basketry and to reify it as the basketry rules and esthetics that “have always been.” Roe (Chapter 2) calls this perspective a “deflection-from-self” strategy for innovation.

With the arrival of grandchildren, the weaver reached the pinnacle of her power and stylistic freedom. She continued to portray her style as timeless and as part of a cultural heritage being passed down unchanged from the ancestors.

Nowadays, an individual's weaving style also involves a dynamic between her own creativity and white market preferences, which has led to various stylistic innovations. Contact and the development of this market has witnessed, for example, the predominance of fancy baskets at the expense of utilitarian forms, and the “signing” of work with a maker's mark. However, these innovations have been built on and filtered through culturally antecedent practices. The fancy baskets were traditionally gift baskets. Maker's marks have antiquity in the spirit breaks, or *dau*, described in Table 8-3.

Not all individual choices in response to market forces have led to change. This is clear in the choice of basket materials. Basket weavers have continued to use natural materials over store bought ones because of their cultural values, even though this has meant a reduction in profits.

Individual Sources of Inspiration

The factors that inspire truly new and creative approaches to basketry, as opposed to the borrowing of new approaches, are difficult to determine. One explicitly stated factor, however, is dreaming (see also Rosenthal, Chapter 10). Mabel McKay, a Cashe Creek Pomo tribal elder, spiritual practitioner, and renowned weaver, told Pryor that dreams were the source of her designs. Mauldin (n.d.) also recorded this, stating “she showed a star design on a basket which was made as the result of a dream. She prays each night for a design to work into a basket and whatever dream she has relative to a design then that design she makes.”

Mabel McKay's use of dreams is linked to her work as a healer:

Mabel told us that she did not learn basketmaking from her mother, as one might have expected, but that rather it derived from inspiration out of a dream she had at the age of seven, the same dream that also brought her healing powers. Pomo basket-makers used to guard their basket-making techniques closely and it was difficult to learn basket-making when she was a child because all the old basket-makers would hide their work and not show it to anyone until it was finished.

As a child she first made miniature baskets, baskets that were a traditional part of certain healing ceremonies in Pomo life. . . . her powers are directly related to her making baskets.

The person who is ill comes to the basket-maker and asks her to make a basket to relieve her pain. In the process of making the miniature basket the source of pain is revealed by the basket and the maker then helps to remove the pain into the basket. The finished basket is then given to the healed person who thereafter wears the miniature basket next to their body. Mabel McKay is much in demand as a basket-maker and as a healer. [Gogol 1983:4–5]

In contrast, Frances McDaniel, Mabel's half-sister, does not weave in this manner. Analogous ties of artistic creation to healing power are also discussed by Rosenthal (Chapter 10).

Most indicative of the influence of healing power on Mabel McKay's style is a feather basket start, which portrays coyote dancing in the round house (Figure 8-5a). All basket makers with whom Pryor talked said that it was bad to portray objects or people on baskets, which would cause blindness. To portray coyote, the Creator, dancing in the sacred structure, is to break this taboo to an extreme. Frances McDaniel would not produce such a basket, nor would many other Pomoan basket makers today. Mabel McKay can produce such a design because others believe she has power and, thus, do not dare question her choice in designs.

Other basket makers besides Mabel McKay dream their designs; the practice is not abnormal. It tends to run in families that have the modern ghost dance dreamers, *maru* (Barrett 1917; Loeb 1926:394-397; Du Bois 1939; Meighan and Riddell 1972). In these instances, dreaming designs may be considered a "family" style to basket making.

Motor Skills

It has been suggested that individuals differed enough in the starting knots that they used in making baskets that specific makers can be identified (Dawson, personal communication). It is possible that motor habits, in combination with learned behavior, produce the peculiarities of starting knots. If so, this would be the most passive factor influencing basket style (Hill and Gunn 1977). We do not have the data to demonstrate this.

Formal Attributes Affected by Individual-Level Processes

The several processes that operate at the level of the individual affect a range of basketry stylistic attributes, as discussed above and summarized in Table 8-5. These attributes vary widely in their visibility and their placement in a manufacturing decision hierarchy (Table 8-4, Figure 8-3). Also, the processes that they reflect range from active ones, such as signature with a maker's mark or expression of a design that was dreamed as part of a curing procedure, to passive processes such as motor skills. Both the range of visibility of the attributes and their active or passive nature concord with predictions of unified theory of design (Carr, Chapter 7:Table 7-1).

THE FAMILY

A number of processes at the level of the family and closely interacting artisans affect the style of Pomo baskets. These include: enculturation, the personal history of the family and its members, the

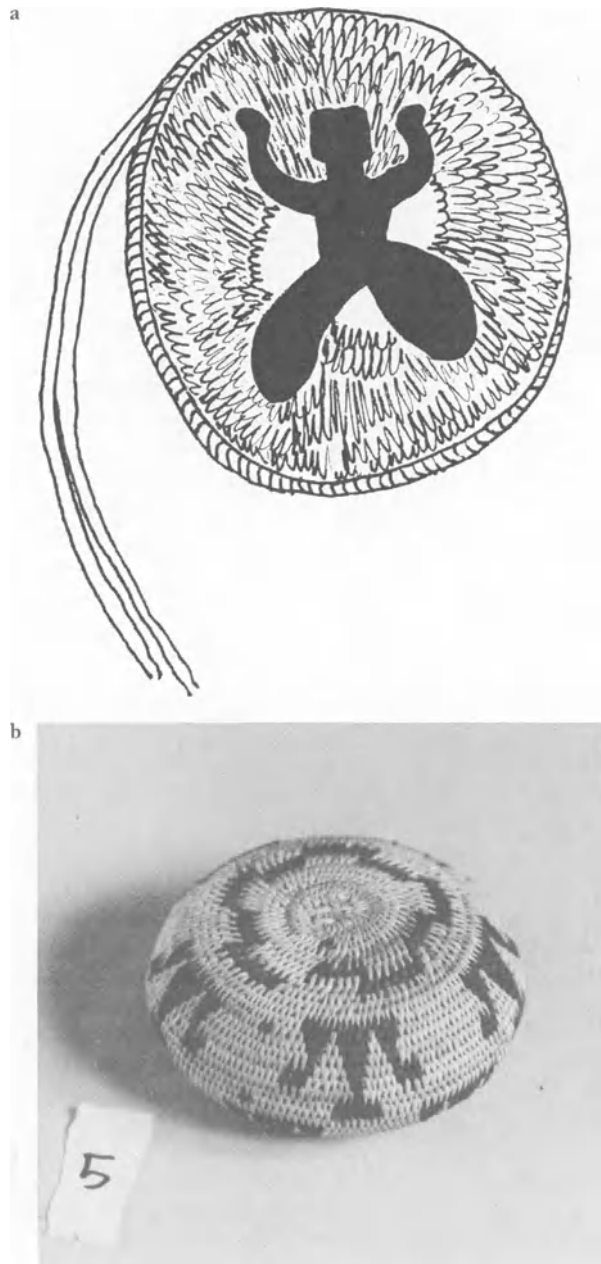


Figure 8-5. (a) Mable McKay's design coyote dancing in the round house. (b) Elsie Allen's *dau.* (c) Mary Benson's basket with a variant of Rhoda Knight's design.

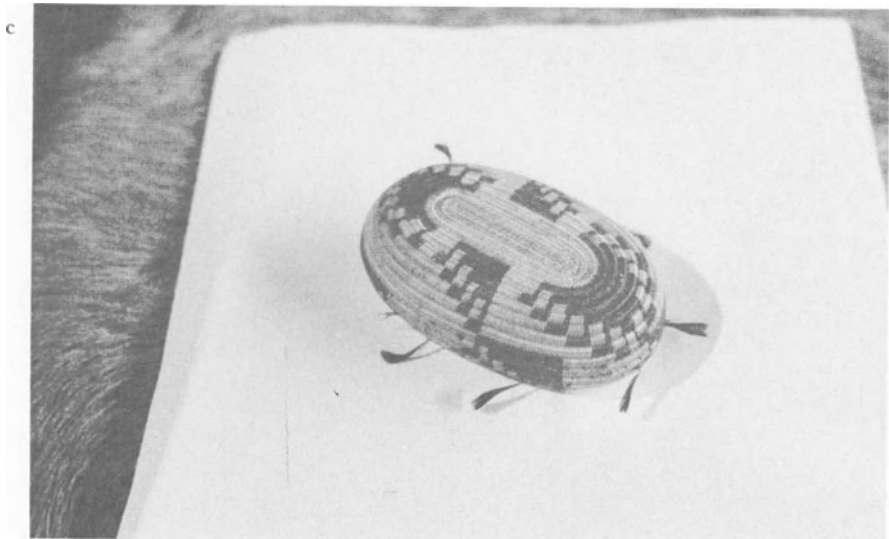


Figure 8-5. (Continued)

Table 8-5. Stylistic Basketry Attributes Affected by Processes at Various Levels

Process	Attributes
<i>Individual level</i>	
Artisan's personal preference	Materials, body form, design cluster, spirit breaks, color choice in beadwork
Dreaming as inspiration	Design cluster, starting design
Motor skills, in part	Starting knots?
<i>Family Level</i>	
Enculturation in the context of personal and family history and power relations; passive interaction	Material, body form, design layout, design cluster, weave, add-on decorations, starting knots
Technological dependency of design on weave and its impact on enculturation	Design cluster
<i>Interacting artisans level</i>	
Passive interaction	Material, body form, design layout, design cluster, weave, relationships among weave and material, spirit breaks, add-on decorations, rim stitching, design element, design element width
<i>Community level</i>	
No attributes or processes clearly reflecting this level of organization were found	
<i>Sublanguage group level</i>	
Shared culture history in the form of migration together into the region	Material, form, weave, design layout, design cluster
Passive interaction	Primarily weave, secondarily form, design cluster
Active interaction	Primarily form and design cluster

preservation and availability of a teacher's baskets after her or his death, power relations among teacher and student within or outside of the family, passive interaction, and the technological dependency of design upon weave (Table 8-2). Each of these processes is discussed, in turn, below.

Power relations have not usually been recognized as significantly affecting enculturation and style (but see Roe, Chapter 2). However, it will be shown here how power relations help to explain why some persons innovate stylistic traits whereas others do not, and why some people can break style rules whereas others are more timid. Similarly important is the interaction of technology, the manufacturing decision hierarchy, and enculturation. Because basket weave determines the range of designs and, to some extent, the range of forms that can be made, a person who does not learn some weaves of his or her family is effectively cut off from using some of the family designs and forms.

The documentation to be presented affirms points made by Roe (1980, Chapter 2), Friedrich (1970; Hardin 1979, 1983), Lathrop (1983), and Arnold (1983). These authors stress that the style of an artisan changes through life as a result of his or her interactions and working with other artisans, both kin and community members. A person's style does not remain that acquired during childhood, as was simplistically assumed by some early "ceramic sociologists" (e.g., Longacre 1964; Hill 1970).

Enculturation

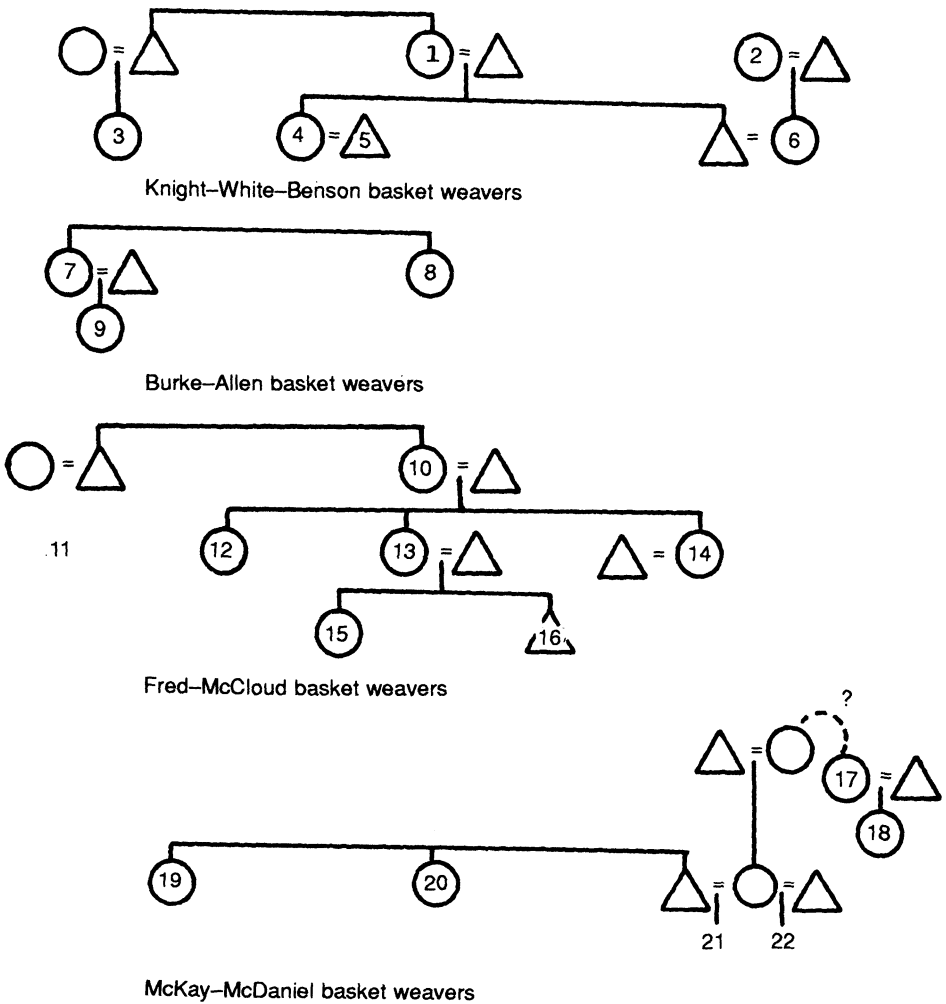
In this section, we will provide examples of the transfer of styles among persons of several kinds of family relations. The genealogical relationships among the individuals to be discussed are summarized in Figure 8-6.

The strongest stylistic similarities in Pryor's basket data are between the baskets of mothers and daughters. This makes sense because basket weaving was taught primarily by the mother and grandmothers of a family (McLendon and Holland 1979:108). Stylistic similarities between grandmothers and granddaughters have not been documented well enough to discuss them. Examples of stylistic similarity between mothers and daughters can be seen in the virtually indistinguishable baskets of Ramona McCloud and Joann McCloud. Also, mother Nellie White and daughter Rhoda Knight both made many truncated cone form baskets and used a rather rare design cluster—the quail top-knot banded—on their basket bases.

Stylistic similarities between mothers and daughters reflect processes at many levels, ranging from more to less passive. Regarding a process at an apparently more passive level, Virginia Knight-Buck (n.d.) has commented that both Rhoda Knight and Rhoda's mother, Nellie White, had starting knots that looked very similar. It may be that some basic aspects of technology, such as starting knots, are transmitted passively from teacher to student rather than actively chosen by the student, largely for lack of known alternatives, and thus tend remain unchanged over generations. This, however, cannot be corroborated. (See an analogous argument and supporting data regarding cordage twist direction, provided by Carr and Maslowski [Chapter 9:321–322].)

Preference for basket weaving materials and their correlation with weaves and designs also seems to be passed from mother to daughter at a more passive level. Collecting, processing, and using materials are more a matter of training in one set of procedures and a lack of known alternative procedures than they are choices among alternatives. If a teacher does not know about some material, her student will usually be excluded from using it. Rhoda Knight and her mother, Nellie White, both produced baskets in black root, as did Rosie Fred, Ramona McCloud, and Joann McCloud (Figure 8-6). Both Mary Benson and her mother, Sarah Knight, used redbud to produce designs on twined baskets and black root to produce designs on coiled baskets.

Preferences for weaves are also passed from mother to daughter at a more passive level. Again, a student is limited in the weaves that she can learn to those known by her teacher. Both Rhoda Knight and Nellie White's baskets are exclusively coiled. So are the baskets by Rosie Fred, Ramona McCloud, and Joann McCloud. Both Mary Benson and her mother, Sarah Knight, excelled in the twining weaves, especially the difficult and highly praised lattice twining.



- Key: 1 = Sarah Knight, 2 = Nellie White, 3 = Joseppa Dick,
4 = Mary Benson, 5 = William Benson, 6 = Rhoda Knight,
7 = Annie Burke, 8 = Susie Billie, 9 = Elsie Allen,
10 = Rosie Fred, 11 = Katie Fred, 12 = Vivian Fred,
13 = Ramona McCloud, 14 = Nora Fred, 15 = Joann McCloud,
16 = Sonnie McCloud, 17 = Uni Taylor, 18 = Banish Taylor,
19 = Nannie Williams, 20 = Annie Boone, 21 = Mable McKay,
22 = Frances McDaniel

Figure 8-6. Genealogies of basket-making families discussed in the text.

Perhaps at a somewhat less passive level is the apparent imparting of preferences for certain designs and basket shapes from mother to daughter. A daughter's productions need not reflect active, conscious decisions to make baskets "like her mother's" rather than "like someone else's" but, instead, simply the intuitive satisfaction of producing her mother's familiar designs and shapes with which she was surrounded while growing up. Also, because basketry is learned primarily through observation, and because the production of designs is a complex process that is interrelated with the construction of the basket, it is understandable that the student would feel most comfortable producing the designs of her teacher. Thus, alternative forms may be known but not seriously considered for production. This technologically constrained situation is somewhat different from the relative freedom in choices that a potter has in painting designs on vessels, for example.

All of these stylistic traits—the starting knots, weaves, designs, and materials—which are known and used by a family and passed down the generations in a more passive fashion, constitute what Sackett (1982) would term "isochrestic variation." They comprise a pool of possibilities that is largely the product of what Braun (Chapter 5) calls "historicity."

Regarding a more active process, aunts and nieces also show stylistic similarity in their baskets. This may reflect the fact that some weavers, after they have learned rudimentary skills from their mother or grandmother, actively reach out to an aunt to learn other basket weaving techniques (Colson 1974:48–49). In this way, Elsie Allen learned to weave feather baskets from her aunt, Susie Billie. Her mother did not know how to weave these (Allen 1972). Pryor has data on two or three baskets made by Elsie Allen's aunt. One of them shares a design cluster with Elsie Allen's baskets and one shares a form with her baskets.

Colson (1974) reports that one weaver told her that, after initially learning weaving from her mother, she turned to her aunt to learn three-stick coiling. She also learned a new design. The weaver was from Mendocino County and her aunt was from adjacent Lake County. The aunt was from a different group who spoke a different language. In this way, style and technology can cross regional and political boundaries, and yet stay within families.

Personal and Family History

Enculturation is not a process that can be understood in isolation. Rather, it must always be contextualized, for it is filtered through unique selective conditions such as personal and family histories, the duration of preservation of material culture templates, and power relations (see also Roe, Chapter 2). These circumstances make enculturation more complex than that denoted by the single term, "isochrestic variation." We now discuss each of these factors in turn.

A good example of the effect of family history is the dissimilarities between the basket styles of a mother and daughter: Annie Burke and Elsie Allen. Whereas Annie Burke produced baskets of many weaves—coiled, plain twined, open work plain twined, lattice twined, and open work lattice twined—her daughter used only coiled and open work plain twined weaves (Table 8-6). There are also striking differences in the types of baskets that Annie Burke and Elsie Allen produced. Pryor's data show that 13 of the 19 documented baskets made by Elsie Allen are either miniature or feathered. None of Annie Burke's baskets are miniature, and she did not weave feather baskets. Finally there is very little overlap in the design layouts used by the mother and daughter (Table 8-7).

These stylistic dissimilarities are rooted in the Burke-Allen family history. Both weavers grew up similarly, in isolation from other Pomo. They were born and initially raised among the more heavily acculturated Southern Pomo, and then on a White ranch at Hopland (Allen 1972:7–13; Colson 1974). The two women differ in that Annie Burke had greater stability in residence at an early age and was able to actively seek out new weaves and designs from other weavers, whereas her daughter had many interruptions soon after starting to learn basketry from her mother and grandmother. At age 11, Elsie Allen was sent away to the Covelo Indian school, where there was an active attempt to eliminate the children's Indian ways. She moved back to Hopland at age 13 when an Indian school was opened

Table 8-6. Frequencies and Percentages of Weaves by Burke-Allen Family Members

[illegible]

there. At age 18 she left home to work in San Francisco. A year later she was sent home, a victim of the 1918 flu epidemic, and was nursed back to health by her mother. She married a Northern Pomo in 1919 and moved with her mother to the Northern Pomo rancheria of Pinoleville (Allen 1972:10–13). In 1932, Elsie Allen's grandmother died and, as was customary, she was buried with her basket material and baskets. Thus, Elsie Allen lost not only her help and knowledge about weaving, but most of the examples of her grandmother's work (Allen 1972:13). Partially as a result of these many interruptions in the learning process and other personal factors, Elsie Allen's attitude toward weaving soured:

In the first few years of my married life, I attempted basketweaving. I made a basket of about eight or nine inches and that was buried with my grandmother. My next one-stick coiled basket was buried with my great uncle. A third basket was passed all around to relatives when someone died and finally somehow came back to us and was buried with my brother-in-law. I didn't have a good feeling about making baskets after that. [Allen 1972:13]

Elsie Allen returned to weaving just before her mother's death (Allen 1972:13–15). Although she had her mother's baskets as a stylistic template, she did not have her mother to teach her the more complex twining weaves. Because of the intricate relationship between style and technology (Pryor

Table 8-7. Frequencies and Percentages of Design Layouts by Burke-Allen Family Members

[illegible]

1987b:91–97), and specifically the dependence of design and some aspects of form upon weave, Elsie Allen was technologically cut off from certain designs and forms that her mother used. Of her mother's baskets, approximately 64% were twined and, thus, not of much use to Elsie Allen as a template for her productions, which were overwhelmingly coiled. Table 8-7 shows that, consequently, there was little overlap in the design layouts of mother and daughter. Also, all of the forms of her mother's twined baskets were lost to Elsie.

In contrast, as one would expect, there is similarity between the mother's and daughter's coiled baskets. Three out of the six coiled baskets that Pryor recorded and that were made by mother Annie Burke are the small globular forms that predominate in her daughter's baskets. Another is a medium-sized boat basket, of which Pryor recorded one example for her daughter. The last two are flat disk shapes. There is one example of this form having been produced by her daughter. Finally, both the mother and daughter used redbud and black root in the designs of their coiled baskets, which was rather rare. Usually redbud is reserved for twined baskets.

Preservation of Stylistic Templates

Another factor at the family level that serves as a context for enculturation is whether baskets are preserved as style templates after the death of a teacher—the factor of “cultural amnesia” (Roe, Chapter 2). Upon the death of a Pomo, all of his or her possessions were to be destroyed. This was done so that the spirit would not be drawn back to the living and cause illness by being seen (Freeland 1923:67). At the death of a basket maker, baskets were among the key possessions destroyed. Gift baskets given by friends and relatives were also destroyed. Baskets were traditionally burned in the funeral pyre with the body and, later in time, either burned in a graveside fire or buried in the grave (Parsell n.d.; Loeb 1926:286–297). As a consequence, a weaver was commonly left without examples of her or his teacher's baskets to follow later in life. Other family-historical factors can have a similar effect, leaving a pupil isolated from her teacher's templates.

The importance of whether stylistic templates are preserved is clear in the case of Ramona McCloud. She told Pryor that she only produced baskets like those of her mother. However, she no longer had any of her mother's baskets to use as examples and, although she remembered her mother's designs, this did not help her reproduce their intricacies. When Pryor showed her photographs of one basket she exclaimed, “Oh, so that's how that design went.” She then showed Pryor one of her baskets in which she had attempted to reproduce the design, which was noticeably different (Figure 8-7). The same effect might occur when a mother's baskets were destroyed at her funeral.

Power Relations between Teacher and Student

Power relations between teacher and student were discussed above as influencing the creativity of an individual: younger, subordinate weavers were more constrained in the styles of baskets that they could produce than older weavers. However, power relations also affect the learning process. In this case, development of the basket style of the dominant person, rather than the subordinate, can be restricted. A good example of this is provided by the baskets of Nellie White and Rhoda Knight, mother and daughter. Rhoda Knight's baskets have quail-top feathers along their rims. Adding this decoration is difficult to execute and must be learned: Ramona McCloud told Pryor that she was given a whole jar of top knots, but ended up having to give them back because she did not know how to weave them into the basket so that they would stand up right. In contrast to Rhonda Knight's baskets, Nellie White's lack feathers. This difference apparently derives from the fact that Rhonda Knight married into a family that produced quail-topped baskets when she was of the correct age and power relations to learn from her in-laws, and apparently did so. In contrast, it would have been undignified for Nellie White, as a mother-in-law, to ask her in-laws to teach her this trick. She was the age of a teacher of cultural heritage, not a learner (see Roe, Chapter 2, for similar examples).

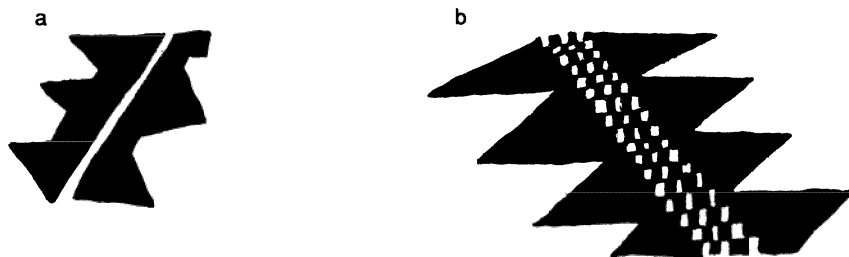


Figure 8-7. Difference between (a) Ramona McCloud's design and (b) her mother's design.

Power relations and their effects on enculturation and creativity shift not only through the lifetime of the individual, as discussed previously, but also over longer periods. In the past, basketry was a valued skill that was wanted by students and was doled out judiciously by elders. Through this process, the elders controlled the young, gained respect as teachers of their cultural heritage, and constrained the basket styles of the young. Today, power relations have, to a certain extent, flipped. Young members of families no longer want to learn basketry, whereas the elders desperately want to pass it on. The result is that the rule-laden system of basketry has become less so: as long as a younger family member wants to learn, the elders are overjoyed and old taboos and restrictions are relaxed.

This loosening of stylistic constraints is reflected in the attitudes of Sonny McCloud, the son of Ramona McCloud. One basket started by him had a variant of the pumpkin flower design, which was one of his mother's favorite designs. However, the design was produced in three colors of beads, which is quite unusual not only for the McCloud family, but also for Pomo baskets in general. When Pryor asked Sonny McCloud about the design, he told Pryor that it was all right, that one could do whatever one wanted. This is far from what Pomo of his parents' and grandparents' generation told Pryor.

Formal Attributes Affected by Processes at the Family Level

Table 8-5 shows that a broad range of stylistic attributes, which vary in their visibility and their placement in a manufacturing decision hierarchy, are affected by enculturation at the family level. This is predicted by both the unified, middle-range theory of design (Carr, Chapter 7:Table 7-2) and Friedrich's (1970) conclusions about more passive processes of interaction, such as enculturation.

BEYOND THE FAMILY: INTERACTING ARTISANS

This section shows that as the social distance between Pomo artists increases and their opportunities for interaction lessen, their basket styles become less similar—what Roe (Chapter 2) calls the “hypothesis of propinquity.” However, not all attributes are affected equally. It is the less visible attributes of baskets that show dissimilarity when frequencies of interaction among artists are low. More visible attributes may still be shared, although not always. Data on the basket styles of cousins and in-laws illustrate this. In contrast, data on more closely interacting friends and half-sisters show the sharing of both less visible and more visible attributes. All of these findings corroborate Friedrich's (1970) conclusions. Also provided are several examples of how close interaction can lead to the “blurring” of stylistic boundaries between ethnic groups (see also Rosenthal, Chapter 10).

Closely Interacting Artisans

Closely interacting artisans include both kin and friends. A clear example of the effects of close interaction on poorly visible stylistic attributes is found in Elsie Allen's practice of making a break in the pattern, or *dau*, in nearly all of her baskets. Her *dau* is distinctive and takes the same form each time: an intermittent line of dots of color running up the side of the basket (Figure 8-5B). In contrast, her mother, Annie Burke, strictly followed the old Pomo weaving rule of making a break in only banded designs on twined baskets; she did not do so on baskets of other designs or weaves. Also, Annie Burke's *dau* differed in form from Elsie Allen's. Nevertheless, Elsie Allen told Pryor that every basket has to have a *dau*, and legitimated this by saying that this practice was handed down to her by her mother. She would search her mother's baskets for the slightest imperfection, which she would then call a *dau*. Instead, it appears that Elsie Allen derived her practice of making *dau* from other weavers, such as friends of the family, like Annie Lake. Another friend, Margie Carpenter, also follows this practice. Both friends' *dau* form specks of color in their baskets similar to Elsie Allen's. Thus, aspects of a weaver's style can move through any network of interacting artisans, not simply among interacting kin. Note that because *dau* are not very visible traits, they are a reliable indicator of the degree of interaction among artisans (Friedrich 1970).

More Distant Artisans

As one moves from close blood kin and in-laws to more spatially, temporally, and socially distant relatives, baskets of these artisans decrease in similarity systematically for less visible attributes, and sometimes for more visible attributes. For example, in the Knight-Benson family (Figure 8-6), the basket maker whose style is least like that of other family weavers in Pryor's data is Maud Stewart Perrish. Unlike her cousin, Rhoda Knight, Maude wove both coiled and diagonal twined baskets. Also, her coiled baskets had designs woven in redbud, rather than in the traditional black root which her cousin Mary Benson used. Both weave and the "grammatical" relationship between weave and color/material are less visible attributes that one would expect to, and that do, reflect this low degree of interaction. Visible attributes likewise reflect little interaction between Maude Stewart Perrish and Mary Benson, though this is not necessarily predictable theoretically: Maude's covering design layout is found in only 6% of Mary Benson's baskets. Also, Maude's design clusters are different from Mary Benson's.

Similarly, in the McCloud-Fred family (Figure 8-6), it is the more distant Katie Fred that was stylistically most dissimilar from other family members. Katie Fred was Ramona McCloud's older cousin. They lived about 25 miles apart. Also, Ramona McCloud disliked traveling, which was sufficient to keep the cousins from having much contact. Adding to their separation was their age difference, which was apparently significant. Pryor photographed one example of Katie Fred's baskets. It shares its most visible attributes—shape and material—with Ramona McCloud's work, but is very different in the less visible attribute of design cluster.

In-laws also may have a semipermeable boundary between them, with the least sharing of poorly visible attributes. Mabel McKay told Pryor that a girl who married into a family from another group would not adopt their weaving style. She would maintain "the hand" of the group from which she originally learned basketry weaving. A good example of this can be found in the Knight-Benson family (Figure 8-6). In-law Nellie White and her daughter, Rhoda Knight, coiled their baskets, whereas both Sarah Knight and Mary Benson were proficient at twining baskets. Neither Rhoda Knight nor Nellie White learned twining from their in-laws.

In contrast, at least one visible attribute was shared between these in-laws. One basket reputedly made by Mary Benson bears the design cluster that Virginia Knight-Buck calls "Rhoda Knight's design" (Figure 8-5c)—a design cluster that she had seen on few other person's baskets.

Close Interaction across Ethnic Boundaries

Several examples illustrate how close interaction among artists of different ethnic affiliations can blur stylistic boundaries between them. Mabel McKay and Frances McDaniel are half-sisters. Although both had the same mother and grandmother, Mabel McKay was influenced by the Pomo weaving tradition of her matriline and calls herself Pomo, whereas Frances McDaniel was influenced by the Wintun (Patwin) tradition of her father and calls herself Wintun. For more detailed personal histories, see Gogol (1983). Nevertheless both make vessels with Pomoan and Wintun traits. This variety appears to have developed in Mabel McKay's works after she began weaving with her half-sister.

Some differences in the two women's basket styles, which are attributable to their ethnic differences, are apparent. Mabel McKay, unlike her half-sister, uses quail top-knots to decorate her baskets, does featherwork, makes boat baskets and miniature baskets, and ornaments her baskets with clam disc beads and abalone shell ornaments. These are all influences from the Pomoan tradition which have withstood change. On the other hand, baskets of both weavers share certain Wintun stylistic features as a result of the weavers having worked together. A diagonal band design cluster called "whirl wind" occurs on 23 percent of Mabel McKay's baskets and 25 percent of Frances McDaniel's baskets. Another design cluster, called the "scorpion design," occurs on 8 percent of the Mabel McKay's baskets and 50 percent of all of Frances McDaniel's baskets. These designs are Wintun not only in form, but in execution. The center line that runs down the middle of the scorpion design is variable in width, which is characteristic of Wintun baskets, but rare in the fanatically crafted Pomoan baskets. Also, the quail top-knot design element of the scorpion design has two variants on the same basket—T- and L-shaped. This is more common in Wintun baskets; it is rare in Pomoan baskets, where strict design element repetition is adhered to.

In some cases, Pomo and Wintun traits are actually combined in the same basket. Mabel McKay made a large bowl basket that has a typically Pomoan lightening-bolt design, but also the truncated cone form of Wintun mush boilers (Pryor 1987:147–152). Another of her large bowls has the typical oval form of Pomoan mush boilers (Pryor 1987:152–168), but the Wintun scorpion design. Frances McDaniel made a Wintun platter with a typical Pomoan ant trail design cluster.

Thus, close interaction among artisans from different ethnic backgrounds can blur the stylistic boundaries between them. Note, again, that the effected attributes range from visible (e.g., basket form, design cluster) to poorly visible (e.g., design element, design element dimensions), in line with theoretical expectation (Carr, Chapter 7).

Interaction among different ethnic groups has been described thus far at the microscale of relationships among particular individuals. At the other extreme, such interaction can be conceived in a more global, summary fashion as the product of all personal histories and movements of individuals between groups, without specifying the particular persons. This is the interaction of which archaeologists more typically speak (e.g., Plog 1980). Intermediate in perspective, one can trace the history and movement of an individual among groups, without specifying the persons with whom they interact. The following two examples, concerning Annie Burke and the Lunna sisters, show this to be productive in understanding the blurring effects of interaction on basket style.

Annie Burke was born in Southern Pomo territory, moved to Hopland in Central Pomo territory, and finally to the Northern Pomo community of Pinoleville. These moves are reflected in her basketry style. Seven of the design clusters that Annie Burke used were present in other Southern Pomo baskets. Ten other design clusters were found on only baskets of the other groups.

The Lunna sisters originally came from Long Valley in Hill Patwin territory, close to Eastern Pomo country. Later, they moved to Yokaia (Central Pomo), and finally settled around Healdsburg (Southern Pomo) (McKay n.d.). This personal history and the interactions that the sisters apparently had with weavers in these different Pomo groups are reflected in the styles of their baskets that Pryor examined and that reportedly were collected around Healdsburg.

There is little that directly indicates the sisters' origins among the Hill Patwin. Two baskets, however, do show influence from the adjacent Eastern Pomo. One is a plaque basket, which is coiled rather than twined, and has a design that resembles the pumpkin flower design. Both traits are characteristic of the Eastern Pomo style (Pryor 1987:154–155). The second basket is a small jar, which has the simple, diagonal, zigzag, design cluster that is also prominent among the Eastern Pomo (Pryor 1987:152–168).

Other baskets of the Lunna sisters show influence from the Central Pomo. Two have a characteristic crossing, star-flower, design layout. The greatest impact on the Lunna sisters' crafts came from the Southern Pomo. One fancy plaque basket, which combines diagonal twining, bands of paired warp twining, lattice twining, and three-strand braiding, is very reminiscent of an early basket attributed to the community of We-shum-tat-tah in the Healdsburg area. Two large jar forms have the characteristic mix of nonrepetitive design clusters that is reminiscent of the Southern Pomo. Three baskets decorated by small "seed beads" resemble the fine work done by the Wappo to the north of the Southern Pomo in Alexander Valley. Finally, there is a plain twined, mush boiler with an overstitched rim, which reminds one of the Southwestern Pomo to the west (Dawson, personal communication).

It is obvious that the Lunna sisters learned much and were greatly influenced stylistically after they left Long Valley. Attributes ranging from visible design layouts and design clusters to poorly visible rim stitching were affected by their interactions.

Formal Attributes Affected by Processes at the Interacting Artisans Level

Summarizing all of the cases of closely interacting artisans just presented, one finds that the visibility of the stylistic attributes that were affected by interaction at this level is the same as the visibility of attributes that were affected by enculturation at the family level: excellent to poor. These data accord with the middle-range theoretical expectations discussed by Carr (Chapter 7) and Friedrich (1970) for more passive interactive processes.

THE COMMUNITY LEVEL OF STYLE

At contact, the community was the level at which ethnic and political solidarity was felt (Kroeber 1932:259). The writings of some early ethnographers imply that beyond certain social processes that promoted cohesion internally, active boundary-maintenance processes between groups also occurred (Hudson n.d.; O'Neale 1932; Washburn, Chapter 4). If this is so, and if basketry style was integral to boundary maintenance (Wobst 1977), then this condition should be evident in the stylistic data that Pryor (1987) collected. However, the data suggest otherwise. It appears that the Indian communities of the North Coast Range used style more to integrate people than to exclude them. As mentioned at the beginning of this paper, this circumstance is reasonable in relation to hunter–gatherer adaptations, which often stress maximizing kin ties; it also concords with stylistic patterning found by Wiessner (1983) for !Kung projectile points.

The data that speak to this issue are as follows. The earliest active collectors of the later 19th century (e.g., Hudson, Purdy) note that each of the various Pomoan groups used characteristic design elements, which enabled other groups to determine where and by whom a basket was made. The zigzag design, known in Eastern Pomo as "wave on the lake," was supposedly characteristic of the Eastern Pomo basket makers around the northwest side of Clear Lake. The triangular design element, known as arrowpoint, supposedly represented the Katcha of Redwood Valley (Hudson n.d.).

McLendon and Holland (1979:124,125) used baskets from the early collectors (Hudson, Purdy, Briggs) to check these stylistic patterns and to look for others. Their results qualify and counter Hudson's less systematic observations. They found that the zigzag design did occur predominantly on the baskets of the Eastern Pomo on the northwestern shores of Clear Lake. However, several examples

were also found that came from the Central Pomo community of Yokaia. This can be explained by the fact that at least 20 Eastern Pomo were living in Yokaia (1900 Federal census) as a result of their marriages. Thus, the zigzag design appears to reflect active, internal social cohesion and/or passive social interaction, rather than active boundary maintenance.

McLendon and Holland found that the arrowpoint design was characteristic not of one ethnic group but of a whole linguistic group—all Northern Pomo-speaking groups. Similarly, they found that elaborate, diagonal overall design compositions based on more than one design element, and delicate compositions of lattice-like elements could be attributed predominantly to the Central Pomo-speaking linguistic group (Yokaia, Shanel, or Hopland), rather than any single ethnic group (McLendon and Holland 1979:124). These patterns again suggest that stylistic basket traits reflect more passive social interaction—here, within the language group—rather than active boundary maintenance between ethnic groups.

A final pattern that supports this position is McLendon and Holland's finding of a strong interrelationship between a basket's shape, size, function, design, the material used, and the linguistic Pomoan group to which its maker belonged. For example, the Northern Pomo coil some of their tray-shaped parching and winnowing baskets as well as mush boiling baskets. This is counter to the norm for most Pomoan groups. Central Pomo-speaking communities also have characteristic baskets:

Diagonal overall design compositions, alternate pairs twining, and the use of redbud and sedge are associated predominantly with cooking and serving vessels. Diagonal overall designs, alternate pairs twining, and the use of redbud and pine root are associated with burden baskets production by Central Pomo-speaking communities, but none are associated with tray like parching and winnowing baskets, mortar baskets, or cups. Cups are consistently coiled and flat bottomed. [McLendon and Holland 1979:125]

These patterns at the language group level are borne out by Pryor's data, which are analyzed in the next section.

THE SUBLANGUAGE GROUP LEVEL OF STYLE

At the sublanguage group level, several primary factors were found to significantly affect the style of baskets, and in particular, their form and designs. These are: (1) shared culture history in the form of the past migration of Pomo groups together into the region; (2) passive interaction as casual learning and diffusion through personal contacts of the kinds described previously; (3) perhaps active interaction as the conscious attempt of an artisan or group to integrate themselves with another group through stylistic mimicry; and (4) the technological dependence of design and form upon weave, working in combination with the above factors. Passive interaction was found to affect the form, designs, and weave of baskets. The least visible attribute, weave, allowed estimation of interaction patterns most consistently, as expected.

These general patterns were found with the help of several multidimensional scaling and regression analyses. The observations, variables, and procedures that were used in these analyses are as follows. First, basket function and its effects on style were held constant in this analysis by focusing on one functional category: mush boilers. These were used to cook acorn mush, a staple of the California Indians. Mush boilers were selected for analysis from the various kinds of Pomo baskets for several reasons. (1) They were less likely to have been traded among the groups. Unlike gift baskets, which were made to be given away, mush boilers are basic, utilitarian baskets made for "home use." (2) They were not made for "show" in the public sphere, unlike gift and feast baskets. Mush boilers were made to be used at the center of the Indian household. (3) Mush boilers were rarely produced after the turn of the century, when they were replaced by more convenient pots and pans. Thus, this category is less affected by temporal variation, particularly the introduction of market forces and the

production of baskets predominantly for sale to White collectors. (4) Mush boilers are well represented in the collections that were studied ($N = 171$) and are well distributed among sublanguage groups.

Baskets from eight sublanguage-stylistic regions/groups were analyzed: Upper Lake, Upper Northern Pomo, Lower Northern Pomo, Central Pomo, Yuki, Western Hill Patwin, Eastern Hill Patwin, and River Patwin (Figure 8-2). Sublanguage-stylistic groups were defined intuitively by inspecting the stylistic data on mush boilers for communities within each language group and subdividing the group into communities sharing distinctive styles. For example, in the upper portion of the Northern Pomo linguistic territory outside of the Russian River drainage, mush boilers are more like those of the Yuki to the north than those in the lower portion of the Northern Pomo territory. Consequently, the Upper Northern Pomo were defined as a sublanguage-stylistic group separate from other Northern Pomo. Similarly, the Western Hill Patwin made their mush boilers more like the Pomoan groups, whereas the Eastern Hill Patwin made theirs more like the River Patwin, so the Hill Patwin were separated into two groups. Also, the Eastern Pomo were divided into the Big Valley group and the Upper Lake group. However, the Big Valley group had too few baskets for comparison and had to be excluded. In contrast to all of these divisions, the Central Pomo and the River Patwin appeared sufficiently homogenous stylistically to be retained as single classes. Using these sublanguage-stylistic groups for analysis, rather than strictly linguistically defined groups, appears to have been appropriate. It produced results that are very similar to those of analyses using the language groups themselves, but provided more detail (Pryor 1987), which was important for interpretation. For brevity, only the sublanguage analyses are presented here.

Language groups fall neatly into three language families, which are useful for interpretation: the Yukian (Yuki), the Hokan (Eastern Pomo, Northern Pomo, and Central Pomo), and the Penutian (Hill Patwin and River Patwin) (Figure 8-2). According to Moratto (1984:529–574), these three language families represent three separate migrations into the North Coast Range of California.

Formal variation in mush boilers was studied in two steps. First, Brainerd-Robinson similarity coefficients (Marquardt 1978:266–304), which range from 0 (dissimilar) to 200 (identical), were calculated for each pair of sublanguage-stylistic groups based on the percentage of occurrence of various mush boiler style traits. These similarity scores were used in an ordinal-scale multidimensional scaling (MDS) analysis to summarize the relationships among regions in two-dimensional plots. Second, multiple regression models were built in order to investigate whether linguistic, social, and/or technological factors best account for the variability in the similarity scores.

One set of similarity coefficients was produced for each of three aspects of style: form, design cluster, and weave. The variables used to describe each of these aspects of style are shown in Table 8-8. Weave was studied, even though it is traditionally viewed as an aspect of technology rather than style, because it determines and is intimately linked with form and design cluster (Figure 8-3). Each set of similarity scores was then scaled with the SAS Proc ALSCAL (Young, Lewychj, and Takane 1983) and, for each, an optimal configuration of the sublanguage-stylistic groups in two dimensional space was plotted (Figures 8-8, 8-9, 8-10). The plots of style relationships among regions were then compared to the actual geographic relationships of groups in order to understand the effects that geographic distance—as a measure of interaction potential and linguistic relationships—might have had on the form, design, and weave aspects of style.

Multiple regression analyses were made to further clarify the effects of language, interaction, and technology on basket form and design. The predictor variables that were chosen to build the models are: (1) the linguistic similarity between sublanguage-stylistic groups, as measured by whether the two groups fell within the same language family, within the same branch of the language family, within the same language group, or within the same dialect group (Shipley 1978:80–90; McLendon and Oswalt 1978:274–275); (2) the geographic distance between sublanguage-stylistic groups, as a measure of their interaction and as estimated by the number of miles between their central points; and (3) the weave similarity between sublanguage-stylistic groups, as a measure of their technological similarity

Table 8-8. Variables Used to Describe Basket Weave, Form, and Design Cluster in the Multidimensional Scaling Analysis

Weave	Form	Design cluster
% Coiled	% Spheroid with widest point below rim, but above middle	% Banded zigzag
% Plain twined		% Banded triangle
% Diagonal twined	% Spheroid with widest point at middle	% Banded square
% Lattice twined	% Spheroid with widest point at rim	% Covering
	% Large truncated cone	% Star-flower crossing
		% Star-flower zigzag
		% Vertical square
		% Vertical triangle-diamond
		% Lightning bolt
		% Isolate
		% Checkerboard
		% Banded simple line

and as based on the absolute difference in the percentage of coiling of mush boilers for each pair. Two regressions models with different response variables were constructed, one using the similarity scores for basket form, and a second using the similarity scores for design cluster. SAS Proc Regression (Sall 1982:37–83) was used to produce standardized Beta-values for each variable in each model. From these standardized values, the relative contribution of each predictor variable in accounting for the similarity scores was established.

Style Distributions: A Multidimensional Scaling Analysis

Figures 8-8 through 8-10 show the stylistic similarity of baskets of different sublanguage-stylistic groups to each other, based on weave, form, and design, in a two-dimensional MDS configuration. On a global level, the three plots are alike. Pomoan (Clusters A, B) and non-Pomoan groups (Clusters C, D) segregate in their basket styles. For the more visible attributes of form and design, Pomo, Patwin, and Yuki language groups segregate in their basket styles. These represent the three prehistoric migrations into the area (Yukian, Penutian, and Hokan). The pattern suggests the influence of shared culture history upon the distribution of form and design.

Basketry of the Western Hill Patwin has a mixture of features from surrounding sublanguage-stylistic groups, which is documented by its central location in the plots. This situation initially suggests that early culture history established a distinct stylistic pattern for the Western Hill Patwin, but that subsequent passive interaction diffused the pattern through time. However, this interpretation is suspect because the Western Hill Patwin are thought to have migrated into the area quite late (Moratto 1984:571). If stylistic similarity were based solely on the length of time that groups have interacted, then one would not expect the Pomo and the Western Hill Patwin to be so similar. Thus, it is tempting to interpret the pattern of stylistic similarity as the result of not simply passive interaction but, rather, active interaction—a conscious attempt on the part of the Western Hill Patwin to integrate themselves with the Pomo by mimicking their basketry style. Through such integration, they might have hoped to ease the hostility caused by their migration into former Pomoan territory. At the same time, one must consider that mush boilers were used primarily in domestic rather than public contexts, that they were not made for display, and that they are not the most likely forms of material culture for achieving this end. Thus, it is not clear that active interaction is responsible for the pattern. Finally, taken together, these points illustrate the importance of interpreting style distributions in their historical context, as Hodder (1982) has stressed.

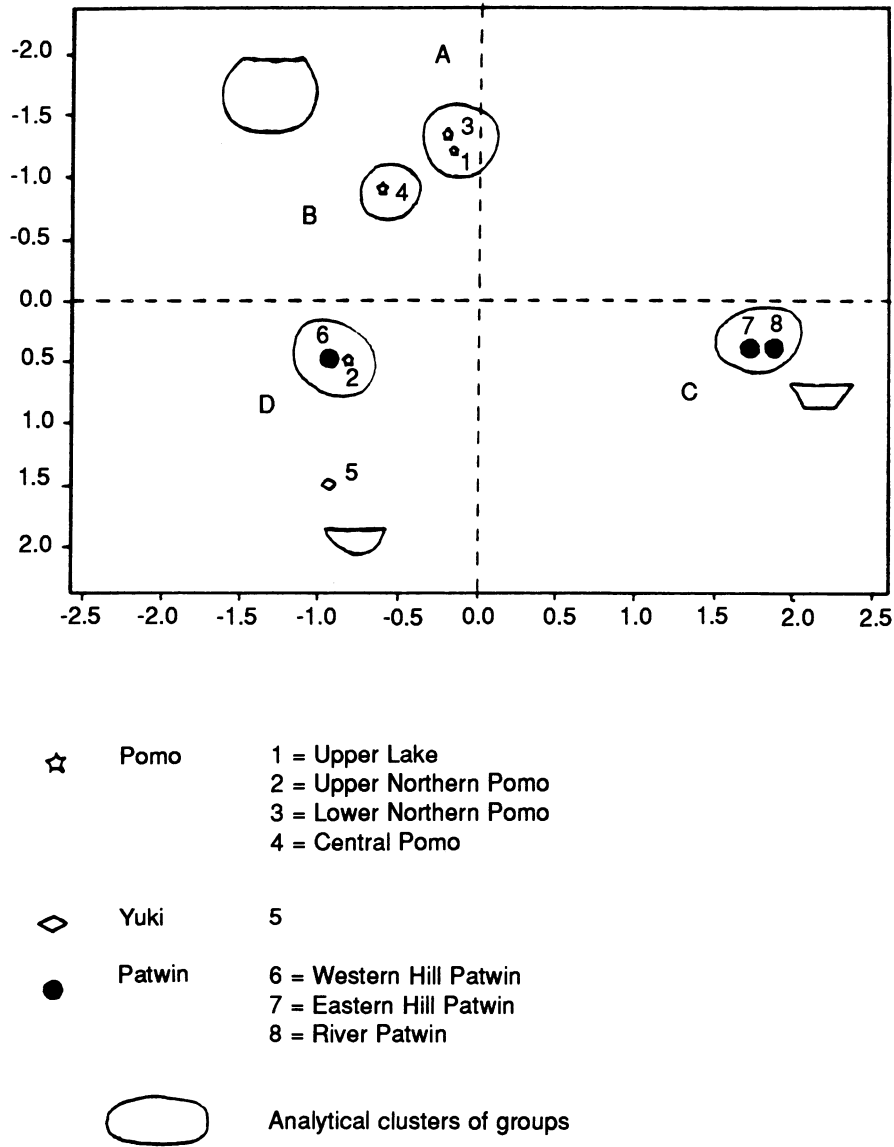


Figure 8-8. Multidimensional scaling plot for basket forms of subdivided language groups. Letters designate analytic clusters.

A second pattern that is apparent in the three plots is the clustering of Yuki, River Patwin, and Eastern Hill Patwin together (Cluster C). The baskets of these sublanguage-stylistic groups become more dispersed on the plots as one moves from the plot for weaves to the plots for forms and designs. In other words, the baskets of these groups are more similar for the less visible attribute of weave than the more visible attributes of form and design. This is not unexpected, given that the three groups are geographically close to each other and interacted, and that less visible attributes are more accurate measures of social interaction (Friedrich 1970; Carr, Chapter 7).

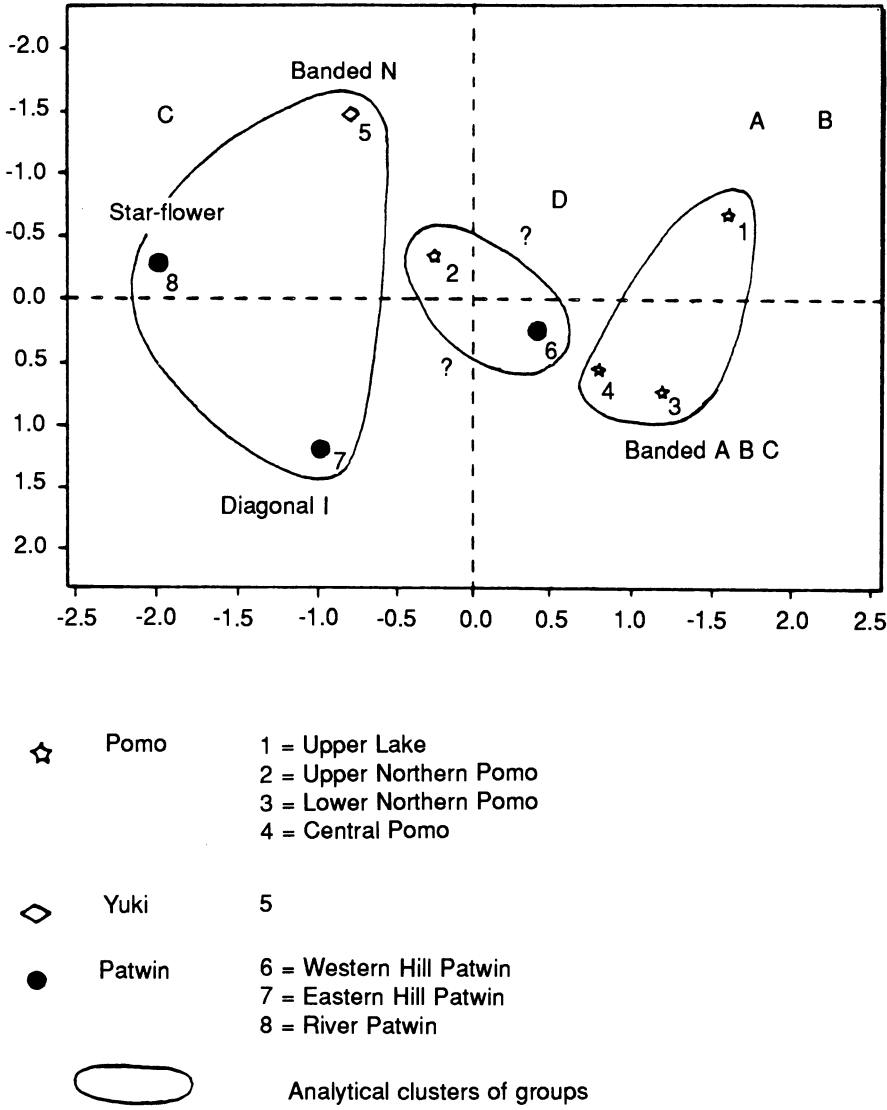
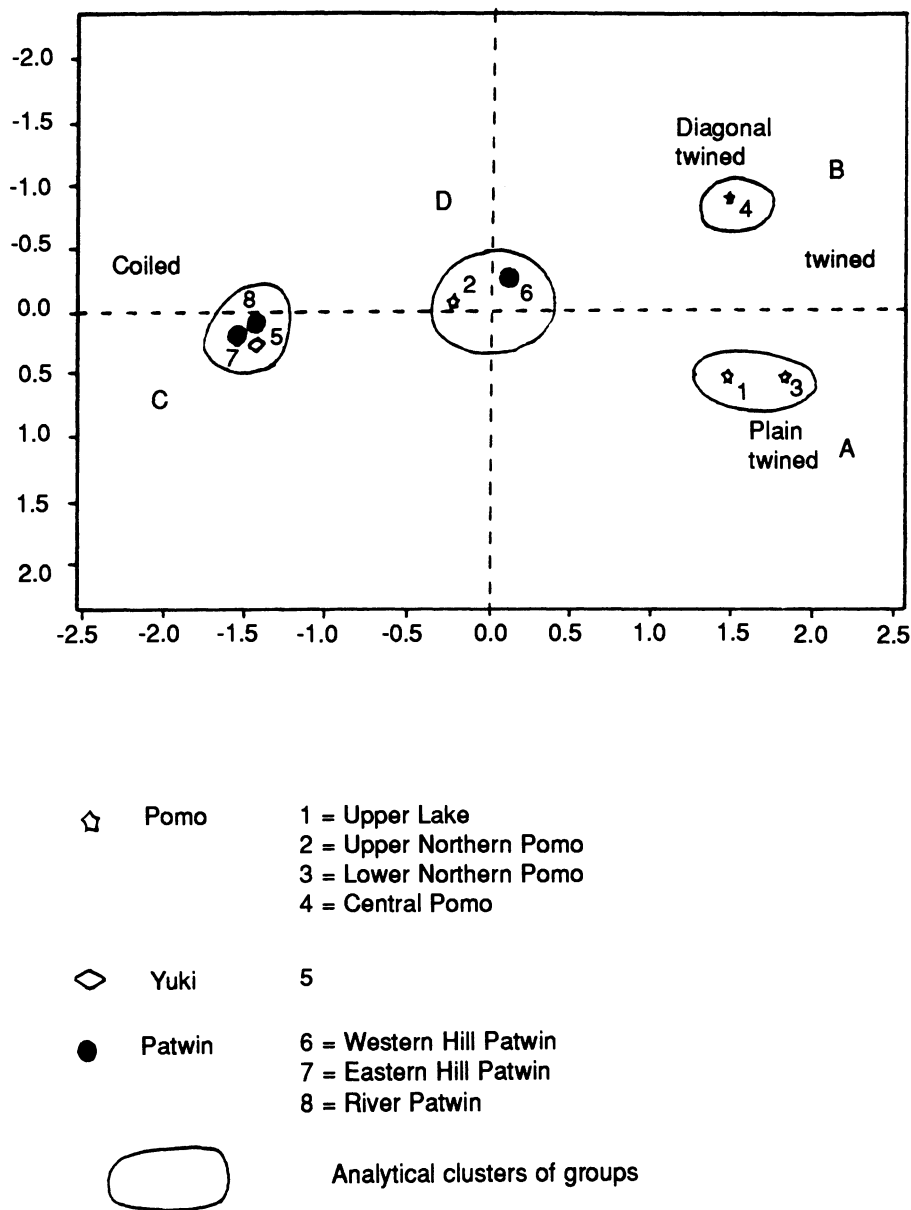


Figure 8-9. Multidimensional scaling plot for basket design clusters of subdivided language groups. Letters designate analytic clusters.

In contrast, the Upper Lake and Western Hill Patwin, which are geographically adjacent, do not cluster together in any of the plots and do not have mush boilers of similar styles. This apparently results from differences in mush boiler technology between the two groups, which will be discussed below.

Dimensional and cluster interpretation of each of the three plots shows which variables are more or less responsible for the patterning in them. In the plot of basket weaves (Figure 8-10), the horizontal axis largely represents the percentage of coiling versus twining. The Yuki, River Patwin, and Eastern



Hill Patwin, who compose one cluster on the left, each exclusively coil their mush boilers. In contrast, the Lower Northern Pomo, Upper Lake, and Central Pomo, who cluster on the right, each twine most of their mush boilers. The vertical axis seems to relate to the percentage of diagonal twining versus plain twining. The Central Pomo, high on this axis, twine their mush boilers diagonally more than any other Pomoan group (45%), whereas the Lower Northern Pomo and the Upper Lake, lower on the axis, twine most of theirs plainly (67% and 63%, respectively).

In the plot of basket forms (Figure 8-8), all of the Pomoan groups (Clusters A, B) have a high percentage of spheroid mush boilers that are widest in the middle. The Yuki (no. 5) have the highest percentage of spheroid mush boilers that are widest at the rim (bowl shaped). The Eastern Hill Patwin and the River Patwin (Cluster C) have the highest percentage of large truncated cone mush boilers. The Western Hill Patwin and the Upper Northern Pomo (Cluster D) both have a mixture of the Pomoan and Yukian mush boiler forms. The Central Pomo (Cluster B) have more of the Yukian mush boiler forms, and thus fall closer to that group.

In the plot of basket designs (Figure 8-9), the River Patwin have a higher percentage of the star-flower zigzag design cluster, the Eastern Hill Patwin have a higher percentage of the diagonal design cluster, and the Yuki have a higher percentage of the banded simple line design cluster. The Central Pomo, the Lower Northern Pomo, and the Upper Lake (Clusters A, B) all have more banded design clusters (zigzag, triangle, and square). The Western Hill Patwin and the Upper Northern Pomo (Cluster D) have a mixture of all of these design clusters.

Factors that Affect Style Distributions: A Regression Analysis

Multiple regression analysis was used to discover the relative contributions of linguistic similarity, interaction (as approximated by geographic distance), and technology (as approximated by percentage of coiling weave), to formal and design similarity between sublanguage-stylistic groups. Tables 8-9 and 8-10, which give the results, show that approximately 50% of the similarity among sublanguage groups in both the form and designs of their baskets can be predicted from geographic distance/interaction and weave technology alone. Also, adding linguistic similarity did not result in a significant improvement in the level of prediction. A similar result was obtained in regression analyses where stylistic similarity was calculated between language groups rather than between sublanguage-stylistic groups. However, in this case, language group did contribute significantly, if weakly, to the final model (Pryor 1987a).

These patterns suggest that forms of interaction below the scale of the sublanguage or language

Table 8-9. Regression Analysis of Similarity Scores for Basket Form

Analysis of variance						
Dependent variable: Form similarity						
Source	DF	Sum of squares	Mean square	F-value	Prob > F	
Model	2	34428.15252	17214.07626	12.505	0.0002	
Error	25	34414.81176	1376.59247			
C Total	14	68842.96429				
	Root MSE	37.10246	R-Square	0.5001		
	Dep Mean	64.03571	Adj R-Sq	0.4601		
Parameter estimates						
Variable	DF	Parameter estimate	Standard error	T for Ho: parameter = 0	Prob > ITI	Standardized estimate
Intercept	1	147.52178	18.11586896	8.143	0.0001	0
Distance	1	-0.85111535	0.22432978	-3.794	0.0008	-0.53650584
Coil	1	-0.73183196	0.22449266	-3.260	0.0032	-0.46098012

Table 8-10. Regression Analysis of Similarity Scores for Basket Design Cluster

Analysis of variance						
Dependent variable: Design cluster similarity						
Source	DF	Sum of squares	Mean square	F-value	Prob > F	
Model	2	18721.20721	9360.60380	16.447	0.0001	
Error	25	14228.04240	569.12170			
C Total	14	32949.25000				
	Root MSE	23.85627	R-Square	0.5682		
	Dep Mean	95.75000	Adj R-Sq	0.5336		
Parameter estimates						
Variable	DF	Parameter estimate	Standard error	T for Ho: parameter = 0	Prob > ITI	Standardized estimate
Intercept	1	157.33013	11.64820611	13.507	0.0001	0
Distance	1	-0.63241319	0.14424037	-4.384	0.0002	-0.57622747
Coil	1	-0.53403030	0.14434509	-3.700	0.0011	-0.48623222

group and across language and sublanguage-stylistic group boundaries (as discussed on pp. 283–285, 287–288), blurred what stylistic distinctions had been produced at these levels by shared culture histories. Few crisp stylistic boundaries can be found; the modal styles of one group fade into the modal styles of another. It cannot be concluded whether passive or active interactions are largely responsible for these patterns, although examples of both have been cited and both are theoretically possible for visible traits like basket shape and design (Carr, Chapter 7). It is clear, however, that a process of boundary maintenance between language or sublanguage-stylistic groups did not operate through the medium of mush boiler style.

The indeterminant relationship found between language and style attributes of several visibility levels is contrary to the pattern found by Wiessner (1983:267–270) for Kalahari San projectile points. Among the San, language groups are differentiated stylistically with both visible attributes (arrow-point size, body design) and less visible attributes (arrow-point tip shape). This difference apparently relates, at least in part, to different patterns of interaction for the Pomo and San. For the Pomo, interaction extends beyond the language group through intermarriage, mobility, and other contacts. For the San, Wiessner concludes that risk is pooled within the language group and that style functions to promote solidarity and sharing within this group. This produces style discontinuities between language groups.

At the same time, the difference between the distributions of visible style traits for San points and for Pomo mush boilers may also reflect the different visibility of the mush boilers and points, themselves, which is a function of their different contexts of use and which determines their relative potentials for signalling. San points are readily visible within and among language groups. Their visible attributes can be used to signal within-group solidarity or between-group distinctions. In contrast, Pomo mush boilers, which are used in the domestic space, are much less visible, both within and among language groups. Their visible attributes (form and design) would not be as effective in signaling solidarity at the language group level or in maintaining boundaries between groups as would the visible attributes of the San's points. Rather, they would more likely, and apparently do, reflect patterns of interaction. Since interaction extends beyond the language group for the Pomo, style distributions for the visible traits of mush boiler do so, too, and are distinguished from the style distributions of visible San point traits.

This aspect of the Pomo case is important to the development of style theory in general. It illustrates that attributes of all visibility levels have the potential for reflecting interaction in their spatial distribution for objects used in less visible contexts (Carr, Chapter 7:195), just as less visible

attributes do in any context (Friedrich 1970). This principle explains the seeming contradiction in Braun's (1977) study, in which expectable patterns of interaction were found, but with visible, rather than obscure, style attributes. Braun examined cooking vessels from domestic contexts that provided them low visibility.

A second conclusion of the regression analyses is the strong effect of weave and its distribution on design and form and their distributions. The Central Pomo and Lower Northern Pomo are adjacent to each other geographically, but differ in the styles of weaves that they prefer. Likewise, the Upper Northern Pomo and the Western Hill Patwin are adjacent, but differ in the weaves that they prefer (Figure 8-10). These distinctions are repeated in the basket forms and designs used by these groups. This illustrates the importance of tracing out the technological constraints defined in a manufacturing decision hierarchy (Figure 8-3). If form and design were not constrained by weave, they might have distributions that are more independent of weave and that reflect factors beyond interaction (see also Carr, Chapter 7:196).

CONCLUSIONS

Detailed analyses of the styles of northern California Indian baskets suggest several general conclusions that are critical to the development of style theory and that have been discussed elsewhere in this book in more general terms. (1) A broad array of behavioral and other processes affect artifact style. Any general theory of style must address all of these processes and their respective effects, rather than a single process such as information exchange or social interaction. (2) Despite this complexity, archeologists can often use artifact styles to reconstruct particular kinds of behavioral processes. This possibility exists because different processes tend to operate at different sociocultural and spatial scales, and to affect different stylistic attributes. (3) The stylistic attributes that are affected by various processes are somewhat predictable from their visibility and manufacturing decision order, as discussed by Carr (Chapter 7) and Friedrich (1970). (4) To be accurate, most style analyses must consider the relations of stylistic variation to technological constraints (Roe, Chapter 2; Carr, Chapter 7; Carr and Maslowski, Chapter 9). (5) Acknowledging the microlevel processes that can determine style, such as personal histories, power relations among family members, and personal sources of creative inspiration, is essential to building any theory of style that pertains to macrolevel processes such as group interaction or group boundary maintenance (see also Roe, Chapter 2; Rosenthal, Chapter 10). The role of power relations in determining patterns of enculturation and stylistic continuity over time and space is an especially important example. This conclusion contradicts Braun's (Chapter 5) position that microscale processes are superfluous in understanding macroscale patterning. (6) The style of an artisan is dynamic through his or her life and relates to the person's social context (see also Roe, Chapter 2). (7) Although artists may be aware of individual stylistic attributes, they also may perceive them in a Gestalt manner, either simultaneously or alternately, when they are discerning the maker of a basket. It is hoped that this paper makes these points more tangible.

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Chapter 9

Cordage and Fabrics

Relating Form, Technology, and Social Processes

CHRISTOPHER CARR AND ROBERT F. MASLOWSKI

Cordage and fabrics are often technologically complex products, with attributes that can range widely in visibility. As a consequence, they can express a variety of processes and constraints, both active and passive. These include technological, ideological, social-structural, social-psychological, personal psychological, and physiological factors (Carr, Chapter 7; Pryor and Carr, Chapter 8). Like ceramics and lithics, cordage and fabrics have the potential to be used archaeologically or ethnographically in the basic tasks of defining social groups, reconstructing patterns of interaction, communication, and movement of persons within and between societies, and revealing patterns of individual creativity. In some cases, these potentials have been tapped (e.g., Taylor 1948; Fry and Adovasio 1970; Newton 1974; Scholtz 1975; Hurley 1979; Croes 1980, 1989; Kent 1983, 1985; Washburn and Crowe 1988; Washburn, Chapter 4).

Nevertheless, it is fair to say that most archaeological and ethnographic studies of textiles have been primarily descriptive, or have used culture history to understand textile change rather than vice versa (e.g., Wheat 1967; Scholtz 1975; Kent 1983, 1985). For archaeological studies, this situation stems from five factors, which are empirical-descriptive or theoretical in nature. First is the irregularity with which textiles are preserved after burial. Second is the lack of training that archaeologists typically receive in textile analysis and the behavioral factors that structure textiles. Third is the nature of systems for describing and classifying textiles. Process-based systems (e.g., Seiler-Baldinger 1976, 1979), which deal with the dynamics of manufacture, are usually inapplicable to static archaeological materials (Kuttruff 1988). At the same time, applicable, structure-based systems (e.g., Emery 1980) are less relevant to studies that aim at reconstructing behavioral and other processes of the kinds mentioned above. Fourth, there are fundamental conflicts among the common structure-based systems for describing textiles (e.g., Adovasio 1977; Emery 1980). Finally, there is a

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lack of middle-range theory (Binford 1977) for assigning possible behavioral and other meanings to specific kinds of formal attributes of textiles.

This chapter works toward overcoming some of these problems. First, it briefly summarizes the essential aspects of cordage and fabric technology and nomenclature. Key systems of nomenclature are critiqued and, for fabrics, an alternative system of attributes, which are more relevant to the study of behavioral and other processes, is introduced. Second, an effort is made to develop middle-range theory on textile style, with attention given to isochrestic and symbolic attributes, but not iconographic features (see Plog, Chapter 11, for definitions of these terms). Some formal, archaeologically identifiable attributes of textile design are ordered hierarchically according to their absolute physical visibility, position in a hierarchy of manufacturing decisions, and position in a sequence of production steps, as defined by Carr (Chapter 7). On the basis of this ordering, the general range of processes and constraints that can determine and be reflected by the textile attributes is specified. These processes include technological, active and passive social-level, and active and passive personal-level phenomena. Finally, the temporal and spatial patterns that are expectable for various textile attributes, when certain more specific processes operate, are defined and illustrated with archaeological and ethnographic data. In the course of these discussions, the unified theory of style (Carr, Chapter 7) receives support. The processes pertain to six key problem domains and include: defining learning pools and interaction networks, reconstructing patterns of recruitment of persons between learning pools, tracing regional population movements, reconstructing regional population replacements, defining settlement systems, and revealing patterns of ceremonial aggregation and alliance. Our focus is on band and tribal-level societies. The archaeological illustrations derive largely from the Midwest United States.

TECHNIQUES FOR MAKING CORDAGE AND FABRICS

The procedures and materials that are used to make cordage and fabrics are very diverse. Hurley (1979) has reviewed them for cordage. Thorough descriptions for fabrics are provided by Birrell (1959), Broudy (1979), Hollen, Saddler, and Langford (1979), Emery (1980), Tortora (1982), and many works published by the Textile Museum, Washington DC. The essential manufacturing decisions that are involved in cordage and fabric technologies are outlined in the next section.

Beyond citing these references, it is necessary to briefly summarize here the most common techniques for spinning and plying. This we do in preparation for later discussions of the behavioral processes that can be reflected in the twist patterns of cordage.

Techniques for spinning and plying cordage can be divided into two fundamental kinds: manual and by spindle. Ethnographically, the most commonly reported technique involves the manual rolling of fibers down the right thigh with the palm of the hand, which produces an initial S-spin, and then plying two or more yarns by rolling them up the thigh, which produces a final Z-twist. This technique is used with retted yucca and bast fibers and is described for the Zuni (Stevenson 1915:78), Pueblo groups (Underhill 1944:30), Paiutes (Wheat 1967:52), coastal Virginia Indians (Strachey 1953:75; Smith 1910:69), Chippewa and other tribes of the Eastern Woodland United States (Jones 1936), and the Guiana Indians (Roth 1924).

A second commonly cited technique for spinning uses the drop spindle. This method is often used to spin cotton, as seen in the Southwest United States and Mexico (Underhill 1944:34–37 on the Hopi and Navaho) and among the Guiana Indians (Roth 1924).

Another manual technique is used to produce cordage from hard fibers like decorticated agave or yucca. A bundle of fibers is twisted by hand in one direction. Then two bundles are put together and twisted by hand in the opposite direction. The lengths of the bundles are staggered and bundles are spliced together using any of a variety of different techniques (Collins 1969:83–84). This process is known archaeologically (Collins 1969; Maslowski 1978), but not ethnographically.

THE ATTRIBUTES, CLASSIFICATION, AND DECISIONS
FOR THE MANUFACTURING OF CORDAGE AND FABRICS

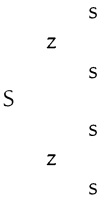
A variety of systems have been devised for describing cordage and fabrics (e.g., Wilder 1951; Blue and Grange 1952; Osborne and Osborne 1954; Newton 1974; Scholtz 1975; Hurley 1979; Seiler-Baldinger 1979; Adovasio and Maslowski 1980). Many are idiosyncratic to the technology of the particular items that were studied. The most systematic, exhaustive, and commonly used descriptive systems are those of Hurley (1979) for cordage and Emery (1980) for most fabrics.

In the following sections, we briefly overview the most essential attributes and/or classes of cordage and fabrics that comprise Hurley's and Emery's descriptive systems. The structure of decisions that are involved in manufacturing cordage and fabrics are then summarized. Finally, Hurley's and Emery's descriptive systems are evaluated for the concordance of their structure with the structure of cordage and fabric manufacturing decisions. The appropriateness of the systems to studies that aim at identifying and measuring behavioral and other processes in terms of the manufacturing decision aspects of textile style is assessed.

Cordage Attributes

Some common attributes for describing cordage are presented in the first column of Table 9-1. Their definitions are as follows. The most basic descriptive unit for cords, and fabrics as well, is the *filament* or *fiber*: a structurally continuous thread. Filaments may be (1) used *unspun* singly and tied together lengthwise, (2) *combined* in an unspun bundle, or (3) *spun* into what Emery (1980:9) calls a *yarn* and Hurley (1969:6) calls a *strand*. Filaments can be spun in either of two directions—S or Z (Figure 9-1). Two or more yarns/strands can then be *plied* or *twisted* together, again in either the S or Z direction, to form what Emery (1980:10) calls a *plied yarn* and Hurley (1969:6) calls a primary cord. Plied and replied yarns are often described generically as *elements*. Figure 9-2 illustrates additional morphological features of cords: segments, beads, the core cord, and supplemental cords.

Hurley designates the S or Z direction of initial spin and the subsequent twist of yarns/strands of the core cord in the following way:



The direction of final twist of the core cord is on the left; the initial twist of fibers into yarns is on the right. Additional ply can be added to each level of elements.

The *tightness of twist* of an element is measured as the angle of twist (helix angle) that its constituent elements make with the vertical axis (Emery 1980:1). The angle can be measured directly or, more frequently, is recorded in twists per cm. However, the twists per cm are proportional to the diameter as well as the tightness of twist of the cord (Osborne and Osborne 1954).

The Structure of the Decision Process in Manufacturing Cordage

Figure 9-3 illustrates many of the decisions that a person must make when manufacturing cordage. The decisions are structured into three sequences that are largely independent of each other and that pertain to different functional dimensions: (1) the strength and diameter requirements

Table 9-1. Formal Cordage Attributes and Their Relation to Various Analytical Hierarchies

	Production step	Decision level ^a	Approximate visibility level	Expected behavioral meaning
<i>Formal attribute</i>				
Color of cord as determined by dye and/or material	15	G1	1, moderate	Technological; social, active or passive; personal, active or passive
Variety of knot or loop	14	G3	3, poor	Social, passive; personal, active or passive
Addition of knots or loops (yes/no)	13	G1	2, poor	Social, passive; personal, active or passive
Number of supplemental elements	12	G4	4, poor	Social, passive; personal, active or passive
Number of segments spanned by the supplemental element(s)	11	G5	3, poor	Social, passive; personal, active or passive
Supplemental element(s) have a direction counter to or conforming with the direction of the core cord (causing smoother or rougher outline)	10	G3	3, poor	Social, passive; personal, active or passive
Parameters of the supplemental elements (the previous two decision levels)	9	G6	Same as for core cord, below	Social, passive; personal, active or passive
Addition of supplemental elements (yes/no)	8	G1	2, poor	Social, passive; personal, active or passive
<i>Attributes of core cord</i>				
Total diameter of core cord	7	S1	2, poor	Social, passive; personal, passive
Direction of twist of final ply level	7	T2	3, poor	Social, passive; personal, passive
Total number of levels of plying and replying	7	S1	8, poor	Social, passive; personal, passive
Twist tightness and diameter of the combined elements at a level	6	S2	2, poor ^b	Social, passive; personal, passive
Direction of twist of the combined elements at a level	6	T4	4, poor	Social, passive; personal, passive
Compatibility of direction of twist of combined elements with those in adjacent levels (completed and to be made)	6	T3	7, poor	Social, passive; personal, passive
Equality of elements in their twist tightness and diameter at a level	5	S3	5, poor	Social, passive; personal, passive

(continued)

Table 9-1. (Continued)

	Production step	Decision level ^a	Approximate visibility level	Expected behavioral meaning
Twist tightness and diameter of each element at a level	5	S3	5, poor	Social, passive; personal, passive
Uniformity of elements in their direction of twist at a level	5	T5	6, poor	Social, passive; personal, passive
Direction of twist of each element at a level	5	T5	6, poor	Social, passive; personal, passive
Number of elements twisted together at a level (ply)	5	S1	4, poor	Social, passive; personal, passive
Twist tightness and diameter of combined filaments	4	S4	9, poor	Social, passive; personal, passive
Direction of filament twist	3	T6	10, poor	Social, passive; personal, passive
Filament use (single, combined, spun)	2	T7	10, poor	Social, passive; personal, passive
Filament length	1	S1	11, poor	Social, passive; personal, passive
Material	1	S1, T1	Depends on range of variation	Social, active or passive; personal, active or passive

^aDecision steps for three independent decision paths are indicated: S = strength and diameter requirements; T = torque and strength requirements; G = gripping and decoration requirements.

^bFor the most visible ply level only. Visibility of the attribute decreases with each ply level.

of cords; (2) their torque requirements; and (3) their gripping requirements and decoration. Most decisions that define any one of the dimensions are different from those that define the others. An exception is the choice of raw material, which affects cord diameter and strength, torque strength, grip, and color.

The multiple, independent decision pathways that globally characterize the manufacture of cordage differ from the global decision structures of most other media. Manufacturing decisions for other media more commonly define a hierarchy or a complex network (see Carr, Chapter 7).

Within each of the three decision sequences for cordage, decisions are made hierarchically and sequentially. Some decision steps are comprised of single decisions whereas others are comprised of multiple, simultaneous decisions. The simultaneous decisions at the beginning of the sequence for cord strength and diameter (Figure 9-3, path S, line S1) are compensatory. The tightness of twist of elements, the number of elements combined at a ply level, and the number of ply levels can be varied in many compensating combinations to meet a particular strength and/or diameter requirement. In contrast, the simultaneous decisions at the beginning of the sequence about gripping and decoration (Figure 9-3, path G) are independent. The addition of supplemental elements, knots, loops, and color to a cord can each be done independently and have independent effects.

The method by which the manufacturing decision structure shown in Figure 9-3 was constructed is that outlined in Chapter 7 on the unified middle-range theory of design. Each of the three sequences of cordage manufacturing decisions is defined by the constraints that earlier decisions make upon the alternatives that are possible in later ones. Most of the relationships shown in Figure 9-3 are self-explanatory, save two in path T. First, the material that is chosen to make a cord may, though need not, influence the direction in which filaments are spun and yarns at subsequent ply levels are twisted.

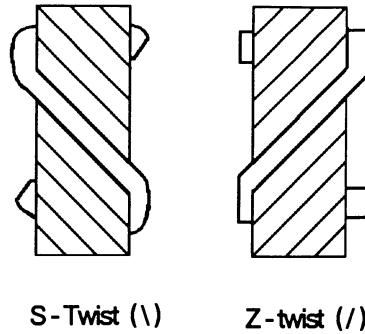


Figure 9-1. Definition of S and Z twist cordage. After Hurley (1979:Figure 5).

This situation arises because some materials have a predisposition to twist in either the S direction (e.g., flax) or the Z direction (e.g., hemp). In general, bast (stem) fibers (e.g., flax, jut, hemp, apocynum, milkweed, nettle) naturally twist in some one direction, whereas leaf fibers (e.g., yucca, agave), seed fibers (e.g., cotton), wool, and silk do not. However, it should be emphasized that even materials with natural twists are spun in the counterdirection and this seems to make little difference in the quality of the spinning except, perhaps, for unusually good spinners (R. Buchanan, personal communication). Also, fibers may be counterspun for cultural reasons such as magical or religious beliefs (e.g., Goodell 1968), or simply historical tradition and preference.

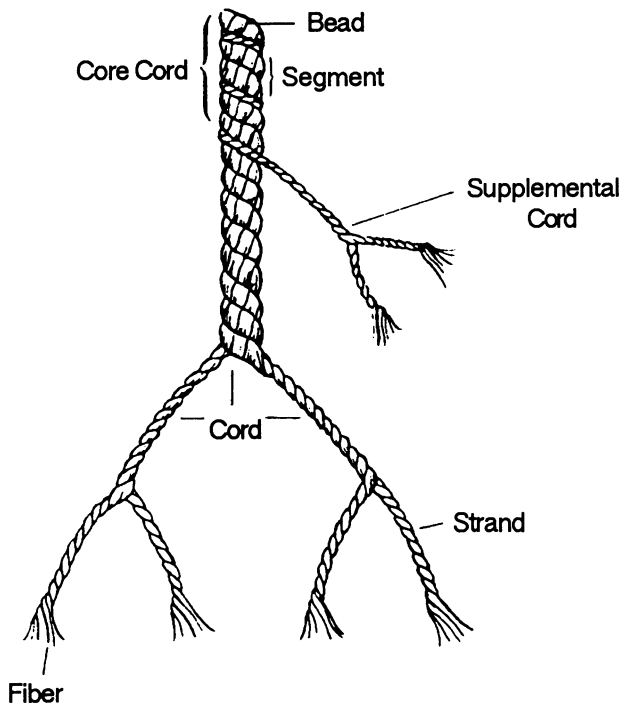


Figure 9-2. Certain cordage attributes. After Hurley (1979:Figure 7).

A second unobvious relationship among decisions is that between the preferred direction of twist of the final ply level and the directions of twist of lower-level plies. In general, to maximize cordage integrity and strength, the twist of a ply level should be opposite that of the next lower ply level, so that elements of the lower ply level do not unravel as the higher ply level is twisted (Hurley 1979:8). Again, this is not an absolute constraint.

Cordage Classification and Its Relation to the Manufacturing Decision Process

Classifications can vary in their structure in a number of ways. One of the most fundamental dimensions of variation distinguishes nonhierarchical, paradigmatic structures from hierarchical, tree-like structures. In a full paradigmatic classification, variables crosscut each other so that all combinations of all of their states are possible. In a tree structure, the states taken by higher-level variables constrain the variables and/or variable states that are relevant at lower levels. Thus, not all combinations of variables and variable states are possible or meaningful in a tree structure.

Hurley's (1979) classification of cordage has both nonhierarchical, paradigmatic and hierarchical, tree-like aspects to its structure. The structure is implicit in the cordage classes that are presented in his monograph rather than explicitly stated. At the highest level, the classification is paradigmatic. Cords are classified by three constellations of variables that define the three sequences of decisions pertinent to cord diameter/strength, torque/strength, and gripping/decoration (Figure 9-3). Because different dimensions are defined by largely different variables, they can crosscut each other so as to produce a nearly full paradigm of combinations of their states. For example, cords of all possible combinations of diameters (strength dimension) and directions of twist of their elements (torque dimension) are possible.

Within each dimension, variables relate to each other both paradigmatically and hierarchically. For example, within the diameter/strength dimension, a full paradigm of combinations of variable states pertaining to the tightness of twist of elements, the number of elements combined at a ply level, and the number of ply levels (Figure 9-3, line S1) are possible. In contrast, within the torque/strength dimension, variable states pertaining to the directions of twist of combined elements, individual elements, and filaments (Figure 9-3, lines T2–T7) usually are coordinated and correlated in a hierarchical manner with each other and with the required direction of twist of the final ply level.

The structure of Hurley's classification strongly parallels the structure of constraints in the decision processes discussed above and shown in Figure 9-3. The three largely independent constellations of variables that pertain to cord diameter/strength, torque/strength, and gripping/decoration correspond to three largely independent sets of manufacturing decisions. More local, hierarchical relationships among attributes within a dimension reflect the constraints that earlier decisions place upon later ones. Local, paradigmatic relationships among variables correspond to the independent or compensatory relationships among simultaneous decisions. In addition, the structure of the system also reflects the order of production steps and the approximate order of variables by the absolute physical visibility of the states that they take (Table 9-1, columns 2 and 4). Thus, Hurley's classification system is processual and perceptual as well as formal-structural. The variables of Hurley's system are relevant to studies that identify and measure behavioral and other processes in terms of the manufacturing decision and production aspects of cordage style.

Fabric Attributes and Classes

Some of the major classes of fabrics that Emery (1980) distinguishes and the taxonomic relations among them are shown in Figure 9-4. Attention is focused in this section on primarily those classes and their defining attributes that are represented among the prehistoric Ohio fabrics analyzed below.

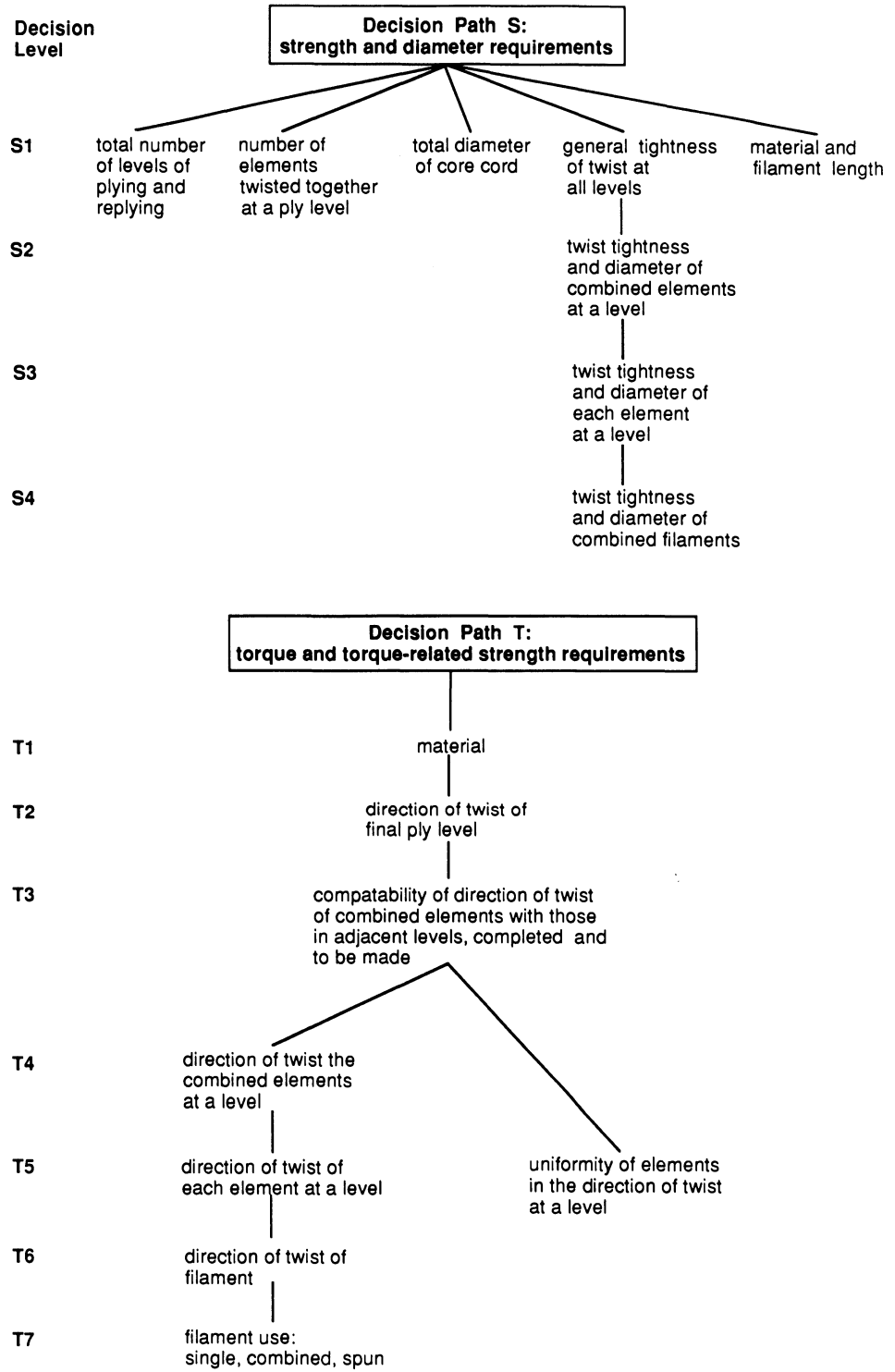


Figure 9-3. Hierarchy of some decisions about cordage attributes to be made in the manufacture of cordage.

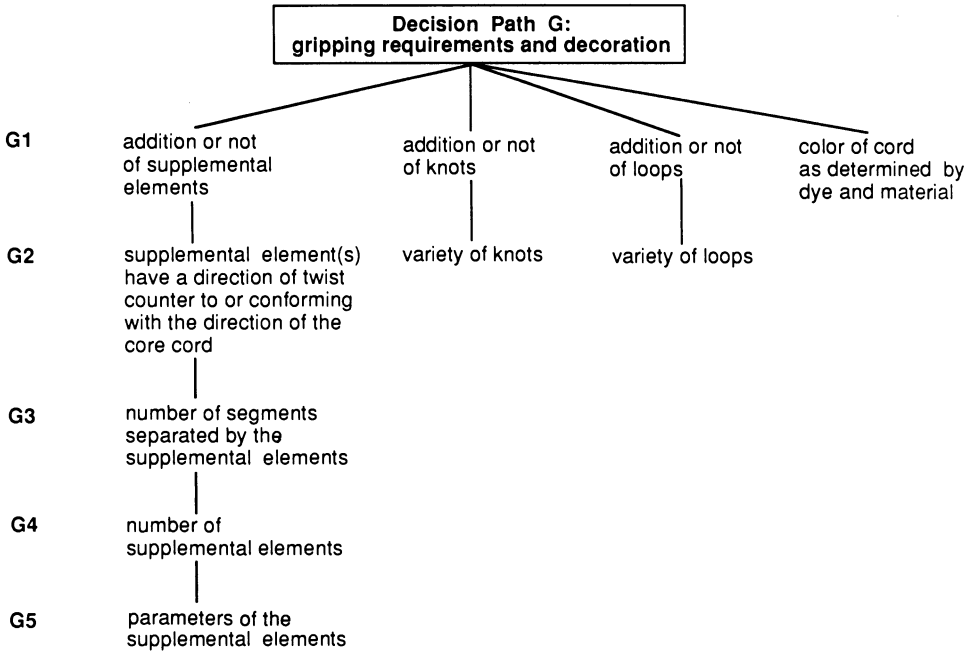


Figure 9-3. (Continued)

Figure 9-5 illustrates some of these fabric classes in order to help the reader visualize their patterns. In a subsequent section, an alternative system of fabric attributes is introduced, which is more relevant to behavioral–processual studies, and is used in place of Emery’s attributes to analyze the Ohio fabrics.

Emery’s (1980) classification first distinguishes fabrics by the number of elements or sets of elements that are interworked (Figure 9-4). A *single element* fabric (Figure 9-5a) is comprised of one element that is interworked with itself with various kinds of loops, links, twists, and knots. One loop, link, twist, or knot is interworked with previous ones. Knotted nets, crochet, and knitting are examples. A *two-single-element* fabric (Figure 9-5b) is produced with two functionally distinct elements. One serves as a passive, straight, horizontally or vertically oriented foundation element; the other is an active, sewing element which is looped, linked, twisted, or knotted around the foundation element. The sewing element is interworked differently from the yarn in a single-element fabric in that the sewing element need not be sufficient for the fabric’s coherence; the fabric may fall apart if the foundation element is removed. Some nets are examples of this form of interworking.

Sets of elements are groups of elements that trend in the same direction and are used in the same way—that is, they are functionally undifferentiated. In fabrics with *one set of elements*, three or more elements are interworked with each other and have the same directional trend. Braiding, or *oblique interlacing* (Figure 9-5c), is the most well-known form. Here, each element passes under and over other elements that cross its trend—that is, each element is *interlaced*. In plaiting, or *interlinking* structures (Figure 9-5d), the elements are *interlinked* rather than interlaced, causing the trend of each to zigzag. A chain-link fence exemplifies this interlinking pattern. In oblique twining (Figure 9-5), cotrending elements are combined in pairs. Each pair is twisted around, rather than interlaced with, each of the oppositely cotrending pairs of elements that cross its path. Element pairs can be twisted when they trend in only one direction, resulting in twisted pairs being interworked with oppositely trending untwisted pairs. This is called single oblique twining (Figure 9-5e). Alternatively, element pairs can be twisted when they trend in either direction, resulting in twisted pairs being interworked

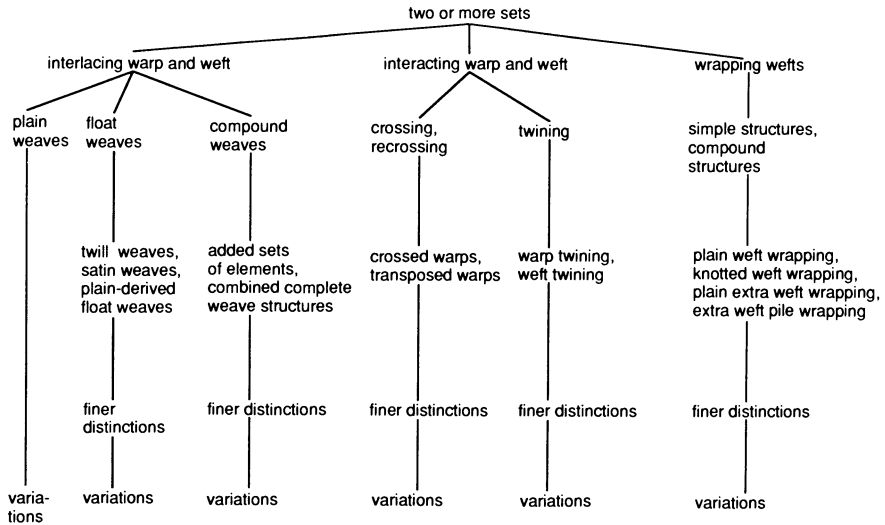


Figure 9-4. (Continued)

taken by multiple attributes at a later level. For example, a selected loom technology constrains a fabric's size, shape, texture, basic weave variation, and specific designs or motifs. (3) Decisions about the state of an attribute at an earlier level can constrain the states of attributes several decision levels down the network. Loom technology constrains weave variation in this manner. (4) At some levels, decisions about multiple attributes are made simultaneously in a compensatory manner. For example, a particular fabric texture can be achieved in several different ways by varying the diameter, spacing, and number of elements, and the fiber material relative to each other. (5) At other levels, decisions about multiple attributes are made simultaneously in a more independent manner. Decisions about fabric size, shape, texture, and color tend to relate in this way. The specific dependencies shown in Figure 9-6 are described in the basic references on weaving techniques cited on page 298. The network decision structure that characterizes weaving is similar to that for basketry making, as illustrated by Pryor and Carr (Chapter 8).

Fabric Classification and its Relation to the Manufacturing Decision Process

Emery's (1980) classification of fabrics (Figure 9-4) has a primarily hierarchical, tree-like structure. For example, twill weaves fall in the higher class of float weaves, which in turn are classified as fabrics with two or more sets of elements. Variables that are pertinent to float weaves, such as whether a twill is a horizontal or vertical herringbone variant or a broken or diamond variant, are not relevant to plain weaves, which are also kinds of fabrics with two sets of elements. Only certain local portions of Emery's classification, especially those concerned with the details of weave, are paradigmatic. For example, both even and uneven twills have the same variants: horizontal and vertical herringbone patterns, and broken and diamond twill patterns.

The primarily hierarchical structure of Emery's classification system does not correspond well with the structure of fabric manufacturing decisions, which form a complex network with some simultaneous decisions at single levels. Instead, the hierarchical structure of Emery's system derives

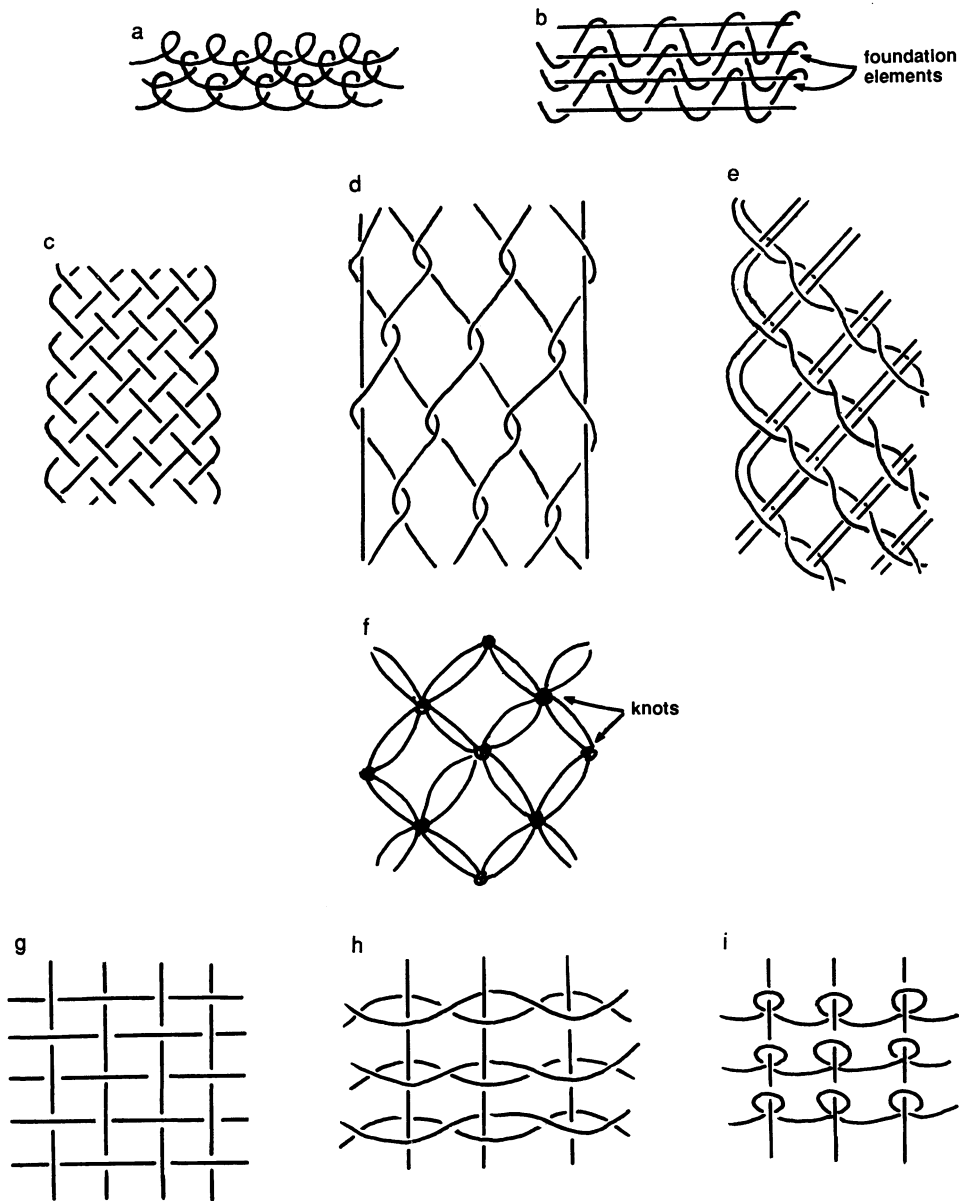


Figure 9-5. Some examples of Emery's (1980) fabric classes. (a) A fabric with a single element structure. (b) A fabric with a two single-element structure. (c, d, e, f) Fabrics with one set of elements: oblique interlacing, interlinking, single oblique twining, and interknotting, respectively. (g, h, i) Fabrics with two sets of elements: interlacing, weft twining, and wrapped wefts, respectively.

Table 9-2. Descriptions of Fabric Class Variations Defined by Emery (1980) and Represented by Ohio Hopewell Fabrics

<i>Textiles with one set of elements</i>	
Variation 15.	Plain oblique interlacing (compact). Described in text.
Variation 16.	Spiral interlinking (spaced). A variant of the interlinking structure described in the text. The interlinking elements spiral at an angle from the vertical rather than have a zigzag vertical trend. In compact weaves, this produces marked vertical ridges if spiraling is right-over-left, or marked horizontal ridges if spiraling is left-over-right.
Variation 11.	Double oblique twining (spaced). Described in text.
<i>Textiles with two sets of elements: Interlacing warps and wefts</i>	
Variation 10.	Simple, balanced, plain weave, 1 under/1 over (compact). The adjective “simple” defines that there is only one set of warp elements and one set of weft elements. “Balanced” refers to the approximately equal spacing of warp elements relative to weft elements. Plain refers to the systematic alternating pattern with which wefts are interlaced over and under the warp elements. In this variation, the pattern for one weft element is under one warp, then over one warp. For the next weft element, it is over one, under one.
Variation 5.	Simple, balanced float weave, 1 under/2 over (compact). Same as variation 10, except the pattern of weft interlacing is under one warp, over two warps. The particular warps that are passed over or under are staggered systematically from weft to weft, producing marked diagonal ribbing. The portion of the weft that passes unbound over multiple (here, two) warps is called a “float.”
Variation 6.	Simple, balanced float weave, 1 under/4 over (compact). Same as variation 5, except the pattern of weft interlacing is under one warp, over four warps, creating weft floats. Again, marked diagonal ribbing occurs.
Variation 13.	Simple weft-faced plain weave (compact). Same as variation 10 except that the weft elements are compacted more closely than the warps. As a result, the warp elements are completely covered and only the weft elements show.
<i>Textiles with two sets of elements: Interacting warps and wefts</i>	
Variation 14.	Warp twining (compact). Described in text.
Variation 2.	Weft twining (spaced). Described in text.
Variation 3.	Weft twining (compact). Described in text.
Variation 1.	Alternate-pair weft twining (spaced). Same as variation 2 except that: (a) weft elements entwine two adjacent warp elements rather than one warp element, and (b) the particular adjacent warp elements that are entwined alternate from row to row. This pattern of interworking produces diagonal ribs in a compact weave, which are not observable in a spaced weave.
Variation 4.	Countered, alternate pair weft twining (compact). Same as variation 1 except that elements alternate from row to row in the direction of their rotation. Compact textiles with this pattern of interworking visually resemble compact oblique interlacing textiles.

largely from her procedure of creating higher-level general formal classes with certain artificial, analytic variables of discrimination. These variables extend the vertical, tree-like structure of her classification, but do not mirror weaving dynamics. For example, the many variants of plain and float weaves are arranged in Emery’s system in a four-level local hierarchy (Figure 9-4). In contrast, a single-level classification, where variations are discriminated according to their particular patterns of interlacing warps and wefts using multiple variables simultaneously, would more directly reflect the manufacturing decision process.

In sum, Emery’s classification tends to be formal-structural rather than processual, a point that she, herself, stresses. Thus, some of the variables of Emery’s system are not relevant to studies that aim at identifying and measuring behavioral and other processes by analyzing fabric style and manufacturing decisions. Previous analyses that have used these variables (e.g., Carr and Hinkle 1984; Hinkle 1984) are misleading.

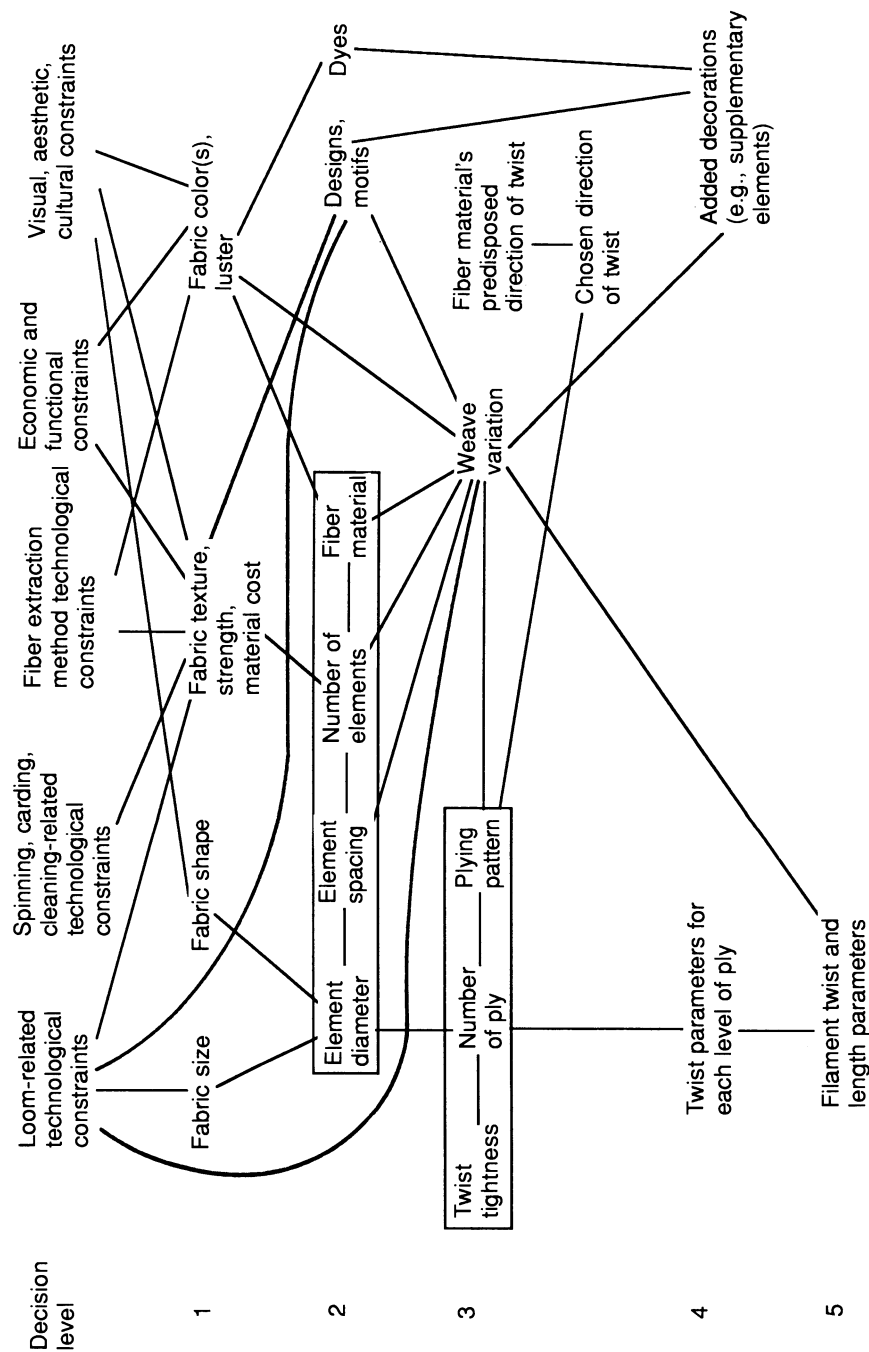


Figure 9-6. Some of the decisions about fabric attributes that are made in the manufacture of fabrics in general. The decision hierarchy has the overall form of a complex network. Decisions of the same level within boxes are made simultaneously in a dependent, compensating manner. Those that are of the same level but not boxed together can be made independently in any order, simultaneously or sequentially.

An Alternate System of Variables

A system of variables that is more relevant for stylistic analysis and that encompasses all of the fabric variation described by Emery's system has yet to be devised. However, Table 9-3 summarizes a processually relevant system that handles the formal variation of Ohio Middle Woodland fabrics and that can easily be modified for analyzing eastern U.S. prehistoric fabrics, in general. The structure of the system reflects the order of manufacturing decisions and production steps involved in weaving and the absolute physical visibility of the states taken by attributes. These features of the system are more directly relevant to social interaction, communication, and other behavioral processes than are Emery's higher-level variables. They are discussed in greater detail in the next section.

A comparison of the taxonomic relations among fabric classes in the process-oriented system in Table 9-3 to those in Emery's system is shown in Figure 9-7 for the fabric variations represented in the Ohio data set. It is clear that assessments of the stylistic similarity of fabric classes using Emery's formal-structural criteria differ considerably from assessments based on visual and manufacturing criteria.

MIDDLE-RANGE THEORY: THE DECISION, PRODUCTION, AND VISIBILITY HIERARCHIES

In this section, the unified theory of artifact design built in Chapter 7 is applied to both cordage and fabrics. This application provides both an example of how to use the theory and a test of it. Other applications are given by Pryor and Carr (Chapter 8), and Rosenthal (Chapter 10). Specifically, cordage or fabric attributes are each ordered into three hierarchies according to their position in a hierarchy of manufacturing decisions (described above), their position in a sequence of production steps, and their absolute physical visibility. The degree of parallelism among the attribute orders that are generated by the decision, production, and visibility hierarchies is then assessed. Also, a mapping between ordered, formal attributes and the behavioral or other processes/constraints that might determine them is described. Only *general* kinds of processes/constraints, such as technological constraints, and active messaging and passive crafting at the social and personal levels, are considered. More specific cultural and behavioral processes, such as enculturation, intermarriage, and migration, which determine the specific spatial and temporal patterning of formal variation, are discussed later.

Cordage

The unified theory of artifact design states that there should be parallelism between the sequence(s) of decisions that are made about attributes during the planning and manufacturing of an artifact, the sequencing of attributes by their order of production, and their sequencing by their absolute physical visibility. Table 9-1 (columns 2–4) shows that these parallel relationships hold well for cordage. Each of the three independent sequences of manufacturing decisions about cordage attributes—S, G, and T—have a moderate to strong relationship to corresponding portions of the production sequence. The relationship is a reversed one, in which first-order decisions are the last to be enacted. (This reversal is also found in fabric weaving, basket making, and some aspects of water color painting.) There is also a moderate, positive correlation between the order of attributes by manufacturing decisions and the order of attributes by their absolute physical visibility. Earlier decisions tend to pertain to more visible attributes.

On the basis of its absolute physical visibility, each cordage attribute can be assigned the range of technological, social, and personal level processes that might be reflected in the state(s) taken by it (Table 9-1), in accord with the unified theory of design. Most cordage attributes have the potential to

Table 9-3. Formal Textile Attributes of Ohio Hopewell Weavings and Their Relation to Various Analytical Hierarchies

Attribute	Attribute states	Production step	Decision level	Approximate visibility level	Expected behavioral meaning
1. Size of fabric	Length, width measures	8	1	1	Technological; social, active or passive; personal, active
2. Shape of fabric	Length/width ratio or other morphological indices	8	1	1	Technological; social, active or passive; personal, active
3. Color and sheen as determined by material and dyes	Color, reflectivity	1, 9	1	2	Technological; social, active or passive; personal, active
<i>Attributes pertinent to weave variation but inadequately described by it alone</i>					
4. Spacing of element(s)	Spaced, compact	7	2	3	Social, active or passive; personal, active
5. General textural coarseness	a. Size of inter-element holes in spaced weaves, in mm. b. Occurrence or not of floats, and span of floats, in compact weaves	7	2	4	Social, active or passive; personal, active
6. Textural directionality of spaced weaves	Oblique or perpendicular orientation of elements	7	3	4	Social, active or passive; personal, active
7. Span between weft "band" elements of spaced weaves	Very widely, moderately, or closely spaced weft band elements; modes defined by frequency distribution	7	2	5	Social, active or passive; personal, active
8. Patterns formed by spans between weft "band" elements of spaced weaves	Many patterns are possible	7	2	5	Social, active or passive; personal, active
9. Textural directionality of spaced weaves	Square or rectangular holes	7	2	6	Social, active or passive; personal, active
10. Textural directionality of compact weaves	Oblique or perpendicular orientation of elements	7	3	7	Social, active or passive; personal, active
11. Specific weave variation	Emery's (1980) finest-level classes	7	3	8	Social, active or passive; personal, active or passive

<i>Attributes pertinent to yarn twisting and plying parameters</i>					
12. Warp and weft element absolute diameters	Measured in mm.	6	2	9	Social, passive; personal, passive
13. Warp and weft element relative diameters	Ratio of warp/weft diameters in mm.	6	2	10	Social, passive; personal, passive
14. Absolute direction of plying of final ply level of warp and weft elements	S or Z	5	3	11	Social, passive; personal, passive
15. Relative direction of plying of final ply level of warp and weft elements	Same or opposite	5	3	12	Social, passive; personal, passive
16. Absolute twist tightness of final ply level of warp and weft elements	Twists/cm.	5	3	13	Social, passive; personal, passive
17. Relative twist tightness of final ply level of warp and weft elements	Ratio of warp twists/cm. to weft twists/cm.	5	3	14	Social, passive; personal, passive
18. Total number of levels of plying of warp and weft elements	Number	4	3	15	Social, passive; personal, passive
19. Attributes pertinent to twist of each ply level	See Table 9-1	3	4	16	Social, passive; personal, passive
20. Attributes pertinent to filament twist, use, and length	See Table 9-1	2	5	17	Social, passive; personal, passive
21. Material	Material class	1	2	Depends on range of variation	Social, passive; personal, passive

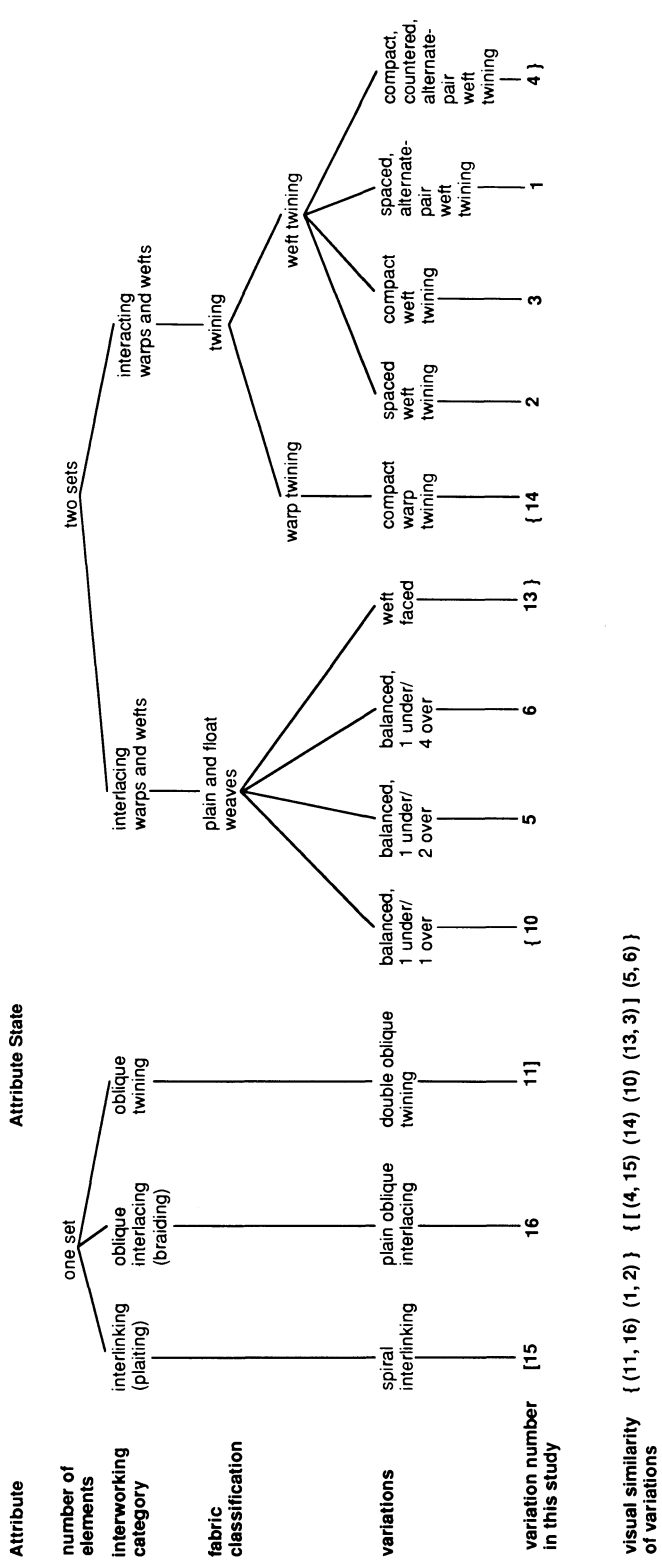


Figure 9-7. Structural similarity of Ohio Hopewell fabric variations using Emery's (1980) classification system compared to the visual similarity of the fabrics using the system in Table 9.2.

reflect only social or personal passive processes because they are so poorly visible. This fact is critical to the archaeological reconstructions discussed below.

In sum, the unified theory of design can be applied in a straightforward manner to cordage attributes in order to structure them for stylistic analysis.

Fabrics

Parallelism between the attribute orders defined by the decision, production, and visibility hierarchies for fabrics is assessed here using the alternative system of attributes shown in Table 9-3, rather than Emery's (1980) attributes. Table 9-3 (columns 3, 4) shows that there is a strong relationship between attributes ordered by their position in a decision hierarchy and their order in a production sequence. The relationship is a reversed one, in which first order decisions are the last to be produced, as with cordage. Also, there is a strong, positive correlation between the order of attributes by manufacturing decisions and their order by their absolute physical visibility. All of these correlations occur, despite the fact that the manufacturing decision hierarchy has a network structure rather than a simple sequential structure. These patterns accord with the unified theory of design.

Table 9-3 also shows that a diversity of technological, social, and personal level processes, active and passive, can be assigned to each attribute on the basis of its absolute visibility and as specified by the unified theory of design.

For both cordage and fabrics, making more specific behavioral interpretations of attributes than those given in Tables 9-1 and 9-3 requires more information than their order by manufacturing decision, production step, and visibility. Data-specific and contextual information is also required, such as the form and scale of the geographic or temporal distributions of alternative attribute states; the contexts of production, use, and deposition of the artifacts; the regional ecological-adaptive milieu that encourages or constrains various artifact uses; artifact viewing distances; the degree of visual contrast between the alternative states taken by each attribute; the composition of potential audiences; the message priorities of the society in contexts of use of the artifact; the rates of change of attributes through time; the strength of association among attributes; differences in patterning for artifacts of different classes/media; and so forth (Braun, Chapter 5; Carr, Chapter 7; Rosenthal, Chapter 10; Plog, Chapter 11). Some of these contextual data are considered in the remainder of this chapter.

MIDDLE-RANGE THEORY: CULTURAL AND BEHAVIORAL PROCESSES RESPONSIBLE FOR SPATIAL AND TEMPORAL PATTERNING

In this section, we draw middle-range theoretic linkages between spatial or temporal patterns in the distribution of cordage and fabric attribute states and six specific behavioral processes or conditions that the patterns reflect. These processes/conditions include enculturation, social interaction within learning pools, patterns of recruitment between societies, population migration or stability, population replacement, the spatial overlap of settlement systems, and ceremonial aggregation between societies. These specific processes/conditions contrast with the more general behavioral interpretations discussed above—technological, social, personal, active, and/or passive—which can be inferred from design information, alone. Both ethnographic and archaeological examples are used to draw the linkages between spatial-temporal patterns and processes or conditions.

The archaeological examples to be presented pertain primarily to the prehistory of the middle and upper Ohio drainage in the eastern United States. Thus, we make a brief aside, here, to introduce the prehistory of this region. Thereafter, the cordage data are introduced and some specific processes that they indicate are discussed. Finally, the fabric data are presented and some specific processes that they reveal are considered.

Ohio Drainage Prehistory

The middle and upper Ohio valley consists of areas within Ohio, Kentucky, West Virginia, and Pennsylvania that are drained by the Ohio River and its tributaries, from Pittsburgh to Cincinnati (Figure 9-8). Most of the region is a part of the unglaciated, hilly Appalachian Plateau. North and west of Chillicothe, south central Ohio, are the glacial till plains of the Midwest United States. During the Holocene, the whole region supported mixed mesophytic forests with islands of prairie vegetation. The environmentally more diverse ecotone between the Appalachian Plateau and Midwest till plain, as well as wider alluvial valley bottoms such as the central Scioto, had more subsistence potential and were a focus of larger population aggregations and more complex cultural developments during Woodland prehistory.

Later prehistoric periods of this region include the Early Woodland (1100 B.C.–150 B.C.), Middle Woodland (150 B.C.–A.D. 350), early Late Woodland (A.D. 350–700), late Late Woodland (A.D. 700–1000), and Late Prehistoric (A.D. 1000–1600). Recent interpretive summaries of the major cultural, human biological, and ecological developments within the Ohio valley and greater Midwest for these times are given by Ford (1974), Fischer (1974), Greber (1976), Braun and Plog (1982), Phillips and

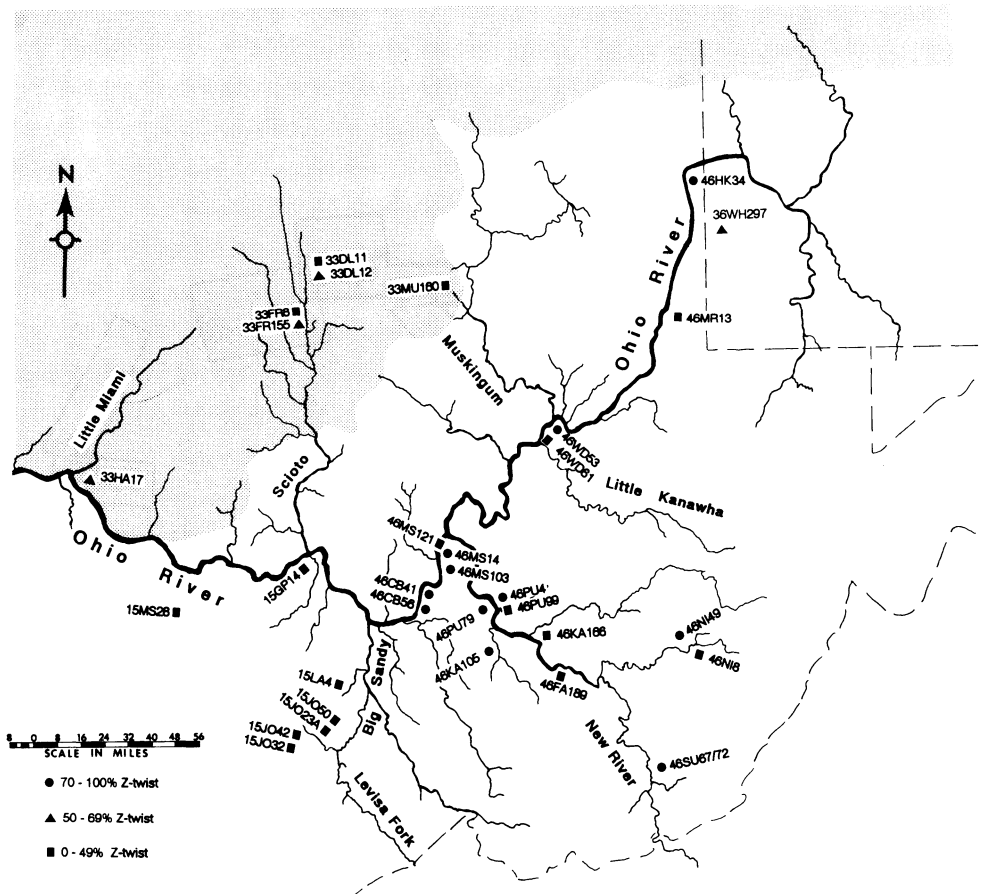


Figure 9-8. Geographic distribution of S and Z twist cordage in Middle and Late Woodland sites in the Ohio valley. Shaded area is glaciated terrain.

Brown (1983), Carr (1985) Wymer (1987, 1992), Seeman (1988) and Taxman (1990). The brief reconstruction provided here is based on much new data obtained over the last 10 years.

The Woodland Period was a time of increasing population, shrinking subsistence catchments, consequent increasing subsistence and social risks, and the development of tribal adaptive mechanisms, as it was over much of the midcontinental United States. Subsistence shifted from the Late Archaic pattern of hunting deer and small game, gathering nuts and other plant foods, and the tending or cultivating of native seed plants of the "Eastern Agricultural Complex," to the Late Prehistoric pattern of maize agriculture, supplemented by hunting and gathering, by circa A.D. 1000–1200.

The earliest nonceremonial Woodland sites in Ohio, dating from 1100 to 500 B.C., are isolated features and artifact "caches" in open air locations and rock shelters. The first mound-covered mortuaries and evidence of vertical social differentiation in the region are evidenced in some Red Ochre and Glacial Kame sites. These were built within river valleys and were concentrated in south-central Ohio, preceding more spectacular ceremonial developments there later. From 500 to 150 B.C., habitation sites in Ohio remained small, but burial mounds became more numerous, larger, and accretional in nature, pointing to increasing sedentism. Effigy earthworks and large circular earthworks, apparently unassociated with burial, also appeared and perhaps marked territory. From 150 B.C. to A.D. 1, the first multiseason occupation sites developed. More complex mortuary programs with multigenerational time depth and the more frequent arrangement of mounds in groups indicate greater vertical social differentiation, the consolidation of lineage organization, and the rise in power of Big Men or lineage heads. Similar developments over the Early Woodland are documented further east for the main Ohio valley and its tributaries.

The Middle Woodland witnessed the rise of Hopewellian societies. Small, dispersed, apparent farmsteads and other habitation sites were situated in main valleys and were occupied multiple seasons and years. Mortuary ceremonialism peaked during this period. Large, geometrically shaped earthworks of 50 or more acres and enclosing burial mounds were built in the main valleys, especially in the Scioto-Paint Creek area. It is unclear whether each was used by a separate local group or by multiple, allied, neighboring local groups—a question to be considered in the style analyses presented below. Social ranking is apparent in that burial within earthwork mortuaries was largely restricted to more prestigious individuals. The remainder of the population, largely of lower prestige, was buried immediately outside the earthworks or in small, regularly spaced mounds in the hinterlands. Prestigious individuals were buried with finely crafted items and materials from very distant regions of the United States, sometimes in large quantities. Both lineage heads and shamans apparently functioned as social leaders. Hopewellian societies lived in both cooperation and competition. Trophy skulls appear to have been taken and buried ritually. At the end of the Middle Woodland period, ridge-top settlements, which may have been defensible forts, may have been built in greater frequencies in Ohio in valleys peripheral to the Scioto-Paint Creek area. These perhaps indicate the expansion of the Scioto Hopewell beyond their initial homeland. In Kentucky and the upper Ohio valley, Hopewellian societies did not arise during the Middle Woodland; Early Woodland cultural patterns, including a dispersed settlement pattern, persisted.

The Early Late Woodland witnessed the development of large, nucleated, sometimes fortified villages in southern Ohio and northern Kentucky, presumably in response to a greater focus on horticulture, increasing population densities, and heightened territoriality. Social integration may have shifted from primarily ritual mechanisms to sodality organization, evidenced in the disappearance of earthworks, a reduction in mortuary ceremonialism, and greater regional uniformity in ceramic styles. Around A.D. 700, the bow and arrow was introduced into the Ohio valley, increasing both hunting efficiency and the potential for social conflict among villages. One or both of these factors may have encouraged the development of a dispersed settlement pattern of small farmsteads, hamlets, and rock shelters in southern Ohio and northern Kentucky between A.D. 700 and 1000. During the Late Prehistoric in the main Ohio valley, nucleated villages arose and subsistence shifted to intensive maize agriculture. Monongahela, Fort Ancient, and Mississippian societies of the upper, middle, and lower Ohio valley, respectively, are defined by these features.

The Cordage Data Set

Maslowski has collected data on the formal variation of prehistoric and protohistoric cordage from the middle and upper Ohio drainage. The data are derived not from actual cord specimens, but from the impressions of cords, which were used to decorate and texture the surface of pottery vessels. A total of 7,069 pottery sherds from 68 archaeological sites were analyzed for several variables, including the final direction (S, Z) of cordage twist, cord diameter, twists per cm., angle of twist, cultural-temporal affiliation of the site components to which the specimens belong, and pottery tempering material, which can be chronologically significant. All of the specimens were impressed with 2-ply cords. The percentage of specimens with final S versus Z twist cords was calculated for each component and is the focus of study here (Table 9-4). The direction of initial spin could not be observed, even when taking clay impressions of cord marks, and is presumed to be opposite the final

Table 9-4. Woodland Cordage Distributions in the Ohio Valley

Phase	Site no.	Site name	No. Z	% Z	No. S	% S
<i>Middle and Late Woodland components</i>						
Levisa	15J023A	Dameron Shelter	14	15.2	78	84.8
	15J032	Blanton	9	11.5	69	88.5
	15J042				10	100.0
	15J050	Glade Branch	6	35.3	11	64.7
Blaine	15LA4	Dow Cook	3	3.9	74	96.1
Cole	33DL11	Cole	0	0.0	10	100.0
	33DL12	Ufferman	16	48.5	17	51.5
	33FR8	Zencor	95	27.6	249	72.4
	33MU160	Locust Site	42	20.0	173	80.0
Newtown	15GP14	Hansen	25	7.3	318	92.4
	15MS28	Pyles Site	3	5.1	56	94.9
	33FR155	Waterplant	97	55.4	78	44.6
	33HA17	Sand Ridge	76	63.3	44	36.7
	46MS121	Childers	242	16.4	1231	83.6
Watson	36WH297	Meadowcroft	13	61.9	8	38.1
	46HK34	Watson	163	86.0	26	14.0
Fairchance	46MR13	Fairchance	8	18.6	35	81.4
Woods	46CB41		17	70.17	7	28.17
	46MS103	Niebert	59	88.0	8	12.0
	46MS14	Woods	80	98.8	1	1.2
Woodland	46PPU79	Cash Farm	58	72.5	22	27.5
	46CB56	Weed Shelter	16	80.0	4	20.0
	46FA189	Alloy	0	0.0	47	100.0
	46KA105	Jarvis Farm	21	100.0	0	0.0
	46KA166	Reed WV	4	18.1	18	81.9
	46WD53	Big Run	26	96.3	1	3.7
	46WD61	Muskingum Is.	0	0.0	21	100.0
	46PU99		6	30.0	14	70.0
	46NI49	Buck Garden	79	84.0	15	16.0
	46NI8	Morrison Shelter	11	31.4	24	68.8
	46SU67/72	Green Sulphur	142	93.5	10	6.5
	46PU4		37	75.5	12	24.5

(continued)

Table 9-4. (Continued)

Phase	Site no.	Site name	No. Z	% Z	No. S	% S
<i>Late Prehistoric components</i>						
Fort Ancient	15JS86	Muir	50	19.4	205	79.8
	33AD23	Wamsley	38	76.0	12	24.0
	33AD25	Island Creek	106	61.0	67	39.0
	33AD36/39	Killen-Grimes	17	51.5	16	48.5
	33LE72	Goldcamp	13	92.8	1	7.2
	46CB4	Gue Farm	93	89.4	11	10.6
	46WA22		24	100.0	0	0.0
Anderson	33WA4	Anderson Village	22	42.0	30	58.0
Baum	33HI123	Paint Cr. #7	13	15.7	70	84.3
Bluestone	46SU20	French Farm	24	96.0	1	4.0
	46SU3	Barker's Bottom	57	80.3	14	19.7
	46SU9		14	74.0	5	26.0
Feurt	46KA7	Marmet Bluffs	11	78.5	3	21.5
	46MS53	Roseberry Farm	74	90.2	8	9.8
Woodside	46LG5	Man Site	85	96.6	3	3.4
	15JO23A	Dameron Shelter	10	100.0		
Monongahela	33BL15	Tower	16	28.1	41	79.9
	33BL16	Hunt	14	35.0	26	65.0
	36BT43	Bonnie Brook	27	52.0	25	48.0
	36GR63	Gensler	18	55.0	15	45.0
	46OH16	Duvall	34	68.0	16	32.0
	36FA26	Campbell	37	83.7	7	16.3
	36FA8	Redstone Old Ft.	97	87.4	14	12.6
	36SO55	Gnagey	196	98.0	4	2.0
<i>Protohistoric components</i>						
Clover	46CB40	Clover	179	84.8	32	15.2
	46MS51	Rolfe Lee #1	50	87.7	7	12.3
	46MS123	Rolfe Lee #2	92	92.0	8	8.0
	46PU31	Buffalo Site	91	97.8	2	2.2
	46LG4	Logan Site	76	98.7	1	1.3
	46KA9	Marmet Village	43	100.0	0	0.0
Foley Farm	36GR1		30	71.0	12	29.0
	36GR52		205	96.0	9	4.0
	36GR60		174	96.0	8	4.0
	36WH34		95	96.0	4	4.0
	36GR160	Throckmorton	68	97.0	2	3.0
	36GR4		35	97.0	1	3.0
	36GR2		60	97.0	2	3.0
Madisonville	46MS61	Orchard Site	11	78.6	3	21.4
Shawnee	15GP15	Bentley Site	26	49.0	27	51.0

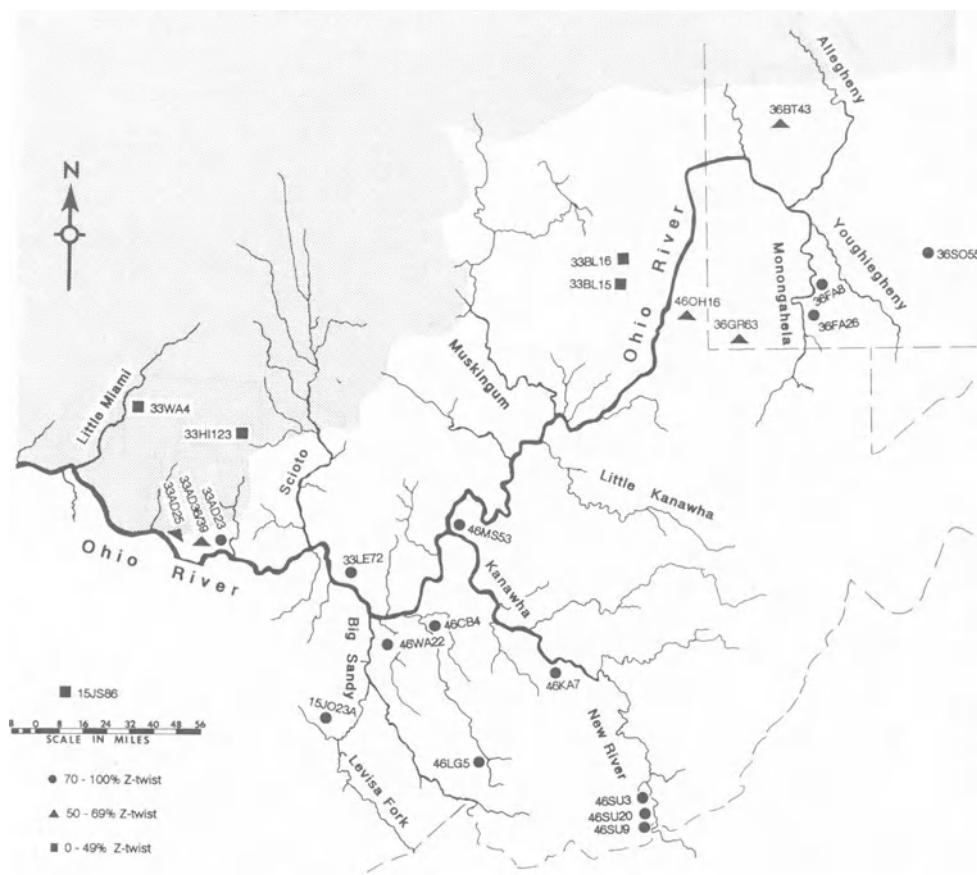


Figure 9-9. Geographic distribution of S and Z twist cordage in Late Prehistoric sites in the Ohio valley. Shaded area is glaciated terrain.

twist. The components range from circa A.D. 100 to 1750. The spatial distributions of components with varying percentages of S and Z twist cordage are shown in Figures 9-8, 9-9, and 9-10 for the Middle and Late Woodland, Late Prehistoric, and Protohistoric periods, respectively. The Middle and Late Woodland Periods have been combined because very few Middle Woodland habitation sites have been excavated and large samples of Middle Woodland sherds were not readily available.

No attempt was made to identify the functions of the pottery vessels that were studied or to search for possible differences in cordage traits with function. It is not expected that a poorly visible trait, like cordage twist, would be varied in a stylistically active manner among vessels of different function (Table 9-1).

Processes Responsible for Spatial and Temporal Patterning in the Direction of Cord Spinning

In this section, we continue building middle-range theory for interpreting formal variation in cordage. Ethnographic and archaeological data that relate spatial and temporal patterning in the spin and twist directions of cordage to specific cultural processes are reviewed.

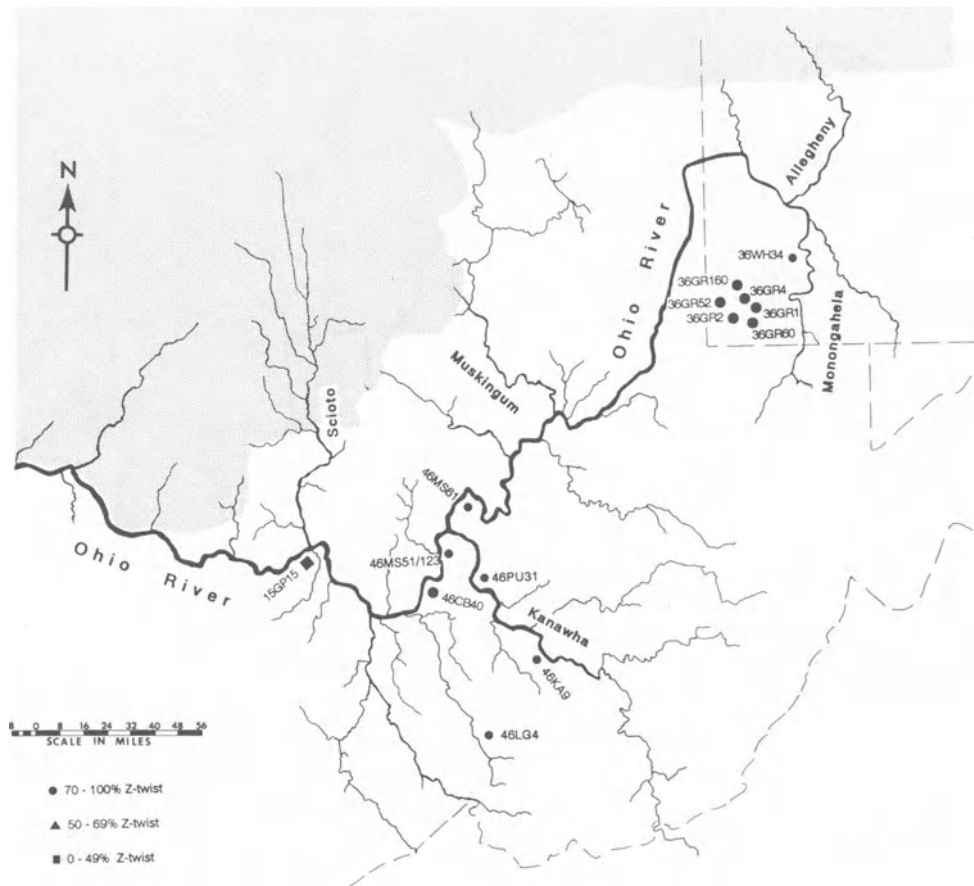


Figure 9-10. Geographic distribution of S and Z twist cordage in Protohistoric sites in the Ohio valley. Shaded area is glaciated terrain.

An Assumption about Spin and Twist Direction and Enculturation

The relationships that are posed below between cordage spin and twist and cultural processes are based on a fundamental assumption. This is that *initial direction of cordage spin and subsequent twist directions are most likely to be determined by passive, traditional social patterns of cord making that are learned by the individual and retained through life* (i.e., isochrestic formal variation), rather than by active messaging about personal or social identity (Table 9-1). This relationship, in turn, derives from the poor visibility and communication potential of spin and twist direction, both during the production of cordage and in the final product. Also, spin and twist directions, so long as they are coordinated, are seldom crucial to artifact function and often are not required by the kind of fiber. Consequently, largely uniform geographic patterning in spin and twist direction can be used to monitor the extent of social interaction that defines a learning pool, and variation can be used to infer processes of human and material geographic redistribution such as intermarriage between pools, population migrations, the exchange of cordage between learning pools, and so on. Because spin direction, once learned, is not usually changed during the course of a person's life, it usually does not reflect other forms of passive interaction that involve *cumulative* learning, such as interaction among closely working artists whose

networks shift through time or the personal history of movement and craft learning of the individual (Pryor and Carr, Chapter 8).

A classic ethnographic example of the dependence of spin direction on passive, traditional, socially learned patterns of manufacture and its retention through life is the distinction between Hopi and Navajo yarn making during the modern period (1880 to the present). Navajo women learned to use the spindle from Hopi men. However, Hopi men rolled the spindle down the leg, which produced an S-spun yarn, whereas the Navaho women rolled the spindle up the leg, which produced a Z-spun yarn (Underhill 1944:36–37). Even when commercial yarn was respun, the Hopi spun it in the S direction and the Navajo in the Z. Thus, modern period Hopi and Navaho weavings can be separated largely on the basis of their spin direction.

A second example of this kind is documented for two neighboring Brazilian Timbira tribes, the Krikati and Pukobyte (Newton 1974). The two tribes are composed of two village clusters, a day's journey apart. Prior to the 1930s, the two tribes appear to have been separate, closed learning pools. Each was largely endogamous. Discreteness was also maintained through group affiliation being assigned by parentage and birthplace rather than lineal descent. There was and is no linguistic term for both groups together. However, more recently, there has been an asymmetrical marriage of Krikati into the Pukobyte tribe.

Definition of these two historically separate learning pools and their recent asymmetrical interaction is reflected in their contrasting cordage and weaving techniques for making cloth hammocks. Krikati spin yarn in the Z direction 2.1 times more than the S direction. In contrast, Pukobyte spin yarn in the S direction 1.7 times more than in the Z direction. Differences in spin direction result from whether the spindle is pulled back or pushed forward along the leg. The lesser consistency of spin direction among the Pukobyte reflects the greater movement of persons from the Kikati into the Pukobyte tribe than vice versa. Similarly, when making twined fabrics, the Krikati use countertwining 3.6 times more than simple S or Z twining, whereas the Pukobyte use S twining 1.3 times more than Z twining or countertwining.

In contrast to the poorly visible traits of yarn spin direction and twining direction are the more visible attributes of hammock size and the spacing between twined wefts. Theoretically, one would expect these visible attributes to be readily copied and easily moved between otherwise discrete, neighboring learning pools (Friedrich 1970). Indeed, they do not show any statistically significant difference among the two tribes (Newton 1974).

Exceptions to the Assumption

There are three exceptions to the assumption that cordage spin direction is determined by passive, traditional social patterns of cord making that are learned and retained through life. These are the effects that raw material, handedness and idiosyncratic production, and beliefs can have upon spin direction. Often, one or more of these factors introduces at least minor formal variation within an otherwise homogeneous learning pool; it is rare to find 100% consistency in spin direction within a cordage assemblage.

Raw Material. Fibers of different raw materials may be spun in different directions when making cordage for two reasons. First, spinning direction may be varied systematically by fiber material type to take advantage of their natural predisposition to twist in either the S or Z direction. Second, spinning patterns may vary with fiber material type because a new fiber and a new manufacturing technique have been introduced together to the learning pool from the outside. In fact, it is common cross-culturally to see different spinning/twisting techniques associated with different fibers, for one or both of these reasons. For example, 93% of the decorticated hard-fiber agave cordage at Moorehead Cave in Trans-Pecos Texas (Maslowski 1978:198) and 95% in the Tehuacan Valley, Mexico (MacNeish 1967:172) are S-spun. Agave cordage specimens were produced by manually

twisting and splicing fiber bundles. In contrast, in these two locales, softer fibers were spun in the opposite, Z direction using a drop spindle or by rolling the fiber on the thigh. At Moorehead Cave, 77% of the retted yucca cordage is Z-spun and, in the Tehuacan Valley, 84% of the bast fiber is Z-spun and 94% of the cotton is Z-spun. The strong preference in the Tehuacan Valley to spin hard-fiber agave cordage in the S direction lasted for 8,000 years. Similarly, Roth (1924) has documented for the South American Guiana Indians that different manufacturing techniques were used to make cords of different fiber materials and that different cordage types were used to make different kinds of artifacts.

Handedness and Idiosyncratic Variation. Ethnographic and archaeological data on this factor are meager. One can speculate that the minor variation in spin direction within the Moorehead Cave or Tehuacan Valley samples cited above results from handedness or idiosyncratic behavior. Some of the Moorehead cordage with reverse spinning is very poorly made, suggesting that it may have been produced by children who were experimenting with the craft.

Belief Systems. Within an otherwise homogeneous learning pool, individuals may actively choose to produce reverse spun yarn in accordance with their beliefs and to restrict its use to certain contexts. The Quechua of the Pisac and Sicuani valleys in the Andean highlands spun yarn in the reverse and wore cords of it for magical effects: to protect themselves from “the winds,” to overcome rheumatism and ease pregnancy, for travel safety, and for success in romance (Goodell 1968:6–7). In some communities, reverse spinning was restricted to medicine men. The use of reverse spun yarn in religious offerings varied contextually. It was a proper offering to the indigenous earth spirit but not to the Virgin Mary or Jesus, who would be provoked by the medicine man’s way of healing. Kerner (1968:34) also documents the use of reverse-spun yarn for sorcery among other Andean groups.

In other cultures, it is possible that yarn of a reverse spin is incorporated within a fabric predominated by yarns spun in the normal direction in order that it not be “perfect” and rival transcendent beings. Middle Eastern carpets and traditional Anglo-American fabrics were made with some imperfection so as to not challenge Allah or God, respectively (Ann Hedlund, personal communication). The Pomo Indians wove an imperfection or *dau* into their baskets for a similar purpose (Pryor and Carr, Chapter 8).

Because spin direction tends to depend primarily on passive enculturation and is retained through life, geographic and temporal patterning in this trait often reflects and can be used to reconstruct five other cultural conditions or processes in egalitarian societies. These are (1) the extent of learning pools as a function of social interaction over the long term; (2) patterns of recruitment (e.g., intermarriage) of persons between learning pools; (3) migrations and intrusions of an exotic population into a region; (4) regional population replacement; and (5) the spatial overlap of settlement systems at their peripheries. These conditions or processes are relevant to both mobile band and more settled tribal societies. Examples of each condition or process, as well as the geographic or temporal patterns for identifying them, are given in the following sections. There must be no or minimal exchange of cordage between relevant social or geographic units for the conditions or processes to produce the patterns discussed below.

Social Interaction within Learning Pools

Learning pools of several different geographic scales (Wiessner 1983; Pryor and Carr, Chapter 8) can potentially be indicated by and reconstructed using the trait of spin direction. These learning pools include subpopulations within a community, ethnic groups, and linguistic groups. In each case, the learning pool may be reconstructed using two criteria: (1) the uniform distribution of a particular spin direction over the area of the learning pool; and (2) the stability of the geographic distribution of that spin direction through multiple generations, and in culturally isolated contexts, for hundreds of years or more (e.g., the Tehuacan case, above). Temporal stability derives from the lack of variability in

spin direction upon which selection or drift processes might otherwise operate. The scale of the learning pool with which the distribution of spin direction is coterminous depends on historical processes and is context-specific.

Intracommunity Learning Pools. These have been reconstructed at the early Late Woodland archaeological village, Waterplant, in the Scioto drainage, Ohio, from the distribution of cordage twist among house clusters. Some house clusters exclusively have pottery produced with 2-ply S-twist cordage, others exclusively have pottery produced with 2-ply Z-twist cordage, and others have both (Wimberly and Dancey 1989). Similarly, at the archaeological site of Divostin, Yugoslavia (Adovasio and Maslowski 1988:353), intracommunity learning pools have been identified from the distributions of the formal details of pottery-impressed fabric types among houses, though not twist patterns. Fifty-nine pottery specimens were analyzed and distinguished three houses from two others.

For both Waterplant and Divostin, the origin of the different learning pools and their stylistic differences is unclear for a lack of comparative regional data. The learning pools might reflect family groups or other networks of closely working artisans within a single ethnic population, in which case stylistic variation might have derived from stochastic drift. Alternatively, the learning pools and their stylistic differences might have resulted from the recruitment of persons from different ethnic, linguistic, or other regional learning pools into the community through marriage, adoption, capture, sheltering, or population agglomeration.

In contrast to Divostin and Waterplant, a case of multiple, stylistically distinguished, intrasite learning pools that clearly resulted from population agglomeration is found at the Bentley Site, a protohistoric and 16th century village (Lower Shawnee Town) in Ohio. Historic accounts indicate that the village's population was comprised of about half Shawnee and half five or six unrelated tribes who sought refuge there during this period of massive population loss, tribal disintegration, and relocation in the eastern United States. Pottery vessels constructed with 2-ply, S-twist cordage and vessels constructed with 2-ply, Z-plied cordage were made there in even proportions.

Sexual Division of Labor. Learning pools that correspond to the sexual division of labor also can be reconstructed when cordage artifacts are known to have been made exclusively by men or women. For example, for 8,000 years of prehistory in Trans-Pecos Texas, the common cordage type was 2-ply, S-spun, Z-twist decorticated agave or yucca. It was produced by manual twisting and splicing fiber bundles. The cordage was used to make utilitarian nets, bags, and sandals. In contrast, female aprons made of retted yucca had the opposite spin direction and were produced by rolling the yucca on the thigh (Maslowski 1978:200–203). This technological distinction could reflect male/female specialization in some aspects of cordage production. Analogous examples of technological diversification and specialization along sexual lines are described by Roe (Chapter 2) for the South American Shipibo.

Ethnic Groups. The spatial and temporal extent of ethnic groups can be reconstructed from distributions of cordage spin direction, especially when these correlate with the distributions of other diagnostic artifact styles. For example, the Fort Ancient archaeological complex, which extends along the Ohio drainage from eastern Indiana to the New River in southern West Virginia, probably represents a culture area with several ethnic groups. These groups share generalized traits of the complex, such as shell-tempered pottery with strap handles and triangular arrow points, but are distinguishable from each other by other artifact styles. One such ethnic group probably resided in the Scioto valley. There, the guilloche pottery motif is very distinctive, visible, and correlates with 2-ply, Z-spun, S-twist cord marking. These spin and twist directions are found homogeneously throughout the Scioto and, in fabrics, have continuity back at least 1,000 years to the Middle Woodland period (Tables 9-4, 9-7). In contrast, cordage of the opposite, 2-ply, S-spun, Z-twist form is found in neighboring southern West Virginia and eastern Kentucky along the New, Kanawha, and main stem Ohio Rivers, and probably reflects a different ethnic group (Figure 9-9, Table 9-4).

A similar spatial pattern with long temporal continuity has been demonstrated for the twist and other attributes of cordage and basketry from Wakashan and Salishan Northwest Coast Wet Sites. These two phases were found to be distinguishable over a 3,000-year span when several textile attributes, including twist, were analyzed multivariately (Croes 1989).

Linguistic Groups. Learning pools that have broad scale and that correspond to linguistic groups can potentially be reconstructed using spin direction. However, confirming that interaction was bounded by linguistic rather than other culture–historical or natural or social-environmental factors is difficult in contexts where direct historical methods cannot be applied.

An example of two regional, neighboring learning pools that have different spin directions and that may have been linguistically differentiated is the dichotomy between societies of the Midwest till plain and the Appalachian Plateau in Ohio from the early Late Woodland through the Late Prehistoric periods (Figures 9-8, 9-9). In the till plain over this time, 75 to 90% of the pottery within sites is cord marked with 2-ply, Z-spun, S-twist cordage. In the Appalachian Plateau, about 90% of the pottery is cordmarked with 2-ply, S-spun, Z-twist cordage. The two regions also tend to be distinguished, respectively, by the presence and absence of Hopewell earthworks and mortuary symbolism. Because each area has multiple, stylistically distinguishable archaeological complexes of the expectable scale of ethnic groups, the two larger areas of cultural coherence cannot represent these and more likely reflect distinct linguistic groups. Linguistic similarity within each area would have allowed people to move more readily within each, taking with them passive behavioral practices such as cordage spin direction. This would have resulted in the uniform spread of these practices within each area. Also, active Hopewell material symbols and ideas would have been understood and spread more easily within the till plain if ethnic groups there were linguistically related. Hopewell symbols and ideas would have been constrained in their further geographic spread if societies of the Appalachian Plateau were linguistically distinguished from those of the till plain. This hypothetical reconstruction would imply that the two linguistic populations were also distinct mating networks. Indeed, skeletal discrete trait analyses show that Ohio populations of the Midwest till plain and Kentucky populations of the Appalachian Plateau were biologically distinct at least as far back as the Early Woodland (Taxman 1990).

In a similar fashion, Croes (1989:117) has used basketry and cordage data from Northwest Coast Wet sites to reconstruct sets of ethnic groups that are “hypothetically associated with language families.”

Recruitment of People between Ethnic Groups

In areas where neighboring regional bands or tribes have cordage traditions that once were distinct in their spin direction, patterns of recruitment of people between groups can be identified from their cordage. Recruitment most commonly takes the form of intermarriage, but the archaeologist should remember that adoption, taking captives, sheltering, and the agglomeration of depopulated, fragmented societies are also possible. Two kinds of regional cordage data are useful for identifying recruitment patterns, as follows.

Regional Trait Frequencies. Recruitment between neighboring societies, be it symmetrical or asymmetrical, is indicated when the artifacts made with the reverse spin direction occur within one or both of the societies in significant frequencies, above those one would expect for variation attributable to handedness. The frequencies of reverse-spun artifacts may vary through time as a function of shifts in recruitment rates. Instances of reverse spin should not correlate with the fiber raw material, artifacts of a specific function, or exchanged goods, if they are to be attributable to recruitment.

A good example of this pattern is the case of intermarriage among the Krikati and Pukobye Timbira (see p. 322). Artifacts with reverse spin occur in frequencies of 32 and 37% within the two

groups, respectively, and are not associated with fiber type. These material conditions apparently result from a significant increase in the rate of intermarriage between the two groups from 1930 to 1950 (Newton 1974).

Regional Spatial Patterning. Settlements near the boundary between two regional bands or tribes that recruit persons from each other may have mixed proportions of artifacts with S and Z spun cordage, in contrast to more interior settlements that have cordage artifacts that are homogeneous in spin direction. Among tribal societies, the proportions in border villages may vary over time without direction, in relation to the dynamic shifting of alliances and frequency of intermarriage among villages—a common pattern in tribal societies (Fried 1968).

This spatial pattern occurs among Late Prehistoric Monongahela sites in the upper Ohio valley. Villages in northern Ohio and northern Pennsylvania in the glacial till plain are predominated by pottery with 2 ply S-twist cord marking whereas those in northern West Virginia and western Pennsylvania in the unglaciated Appalachian Plateau are predominated by pottery with 2 ply Z-twist cord marking. Villages near the physiographic boundary between the two areas (Table 9-4: Bonnie Brook, Duvall, and Gensler; Figure 9-9) have pottery with greater variation in twist direction, probably indicating greater degrees of recruitment among the two ethnic groups there.

A similar pattern and interpretation holds in the middle Ohio valley among Late Prehistoric Fort Ancient villages. Villages in West Virginia and eastern Kentucky overwhelmingly have pottery with 2 ply Z-twist cord marking, whereas those in central Kentucky (e.g., Muir) and the Scioto valley of southern Ohio (e.g., Paint Creek #7) are predominated by pottery with S-twist cord marking. Villages between these two areas, along the Ohio River and below the mouth of the Scioto (e.g., Island Creek, Killen-Grimes, Anderson) have 42 to 61% mixtures of pottery with Z-twist cord marking (Table 9-4; Figure 9-9), again probably indicating the recruitment of peoples from the two different ethnic groups.

Population Migrations, Intrusions, and Replacements

Migrations and Intrusions. Migrations and intrusions of an ethnic group from one learning pool into the territory of another group from another learning pool can be identified with cordage spin data. This is possible when the local group is characterized, over some time, by cordage spun consistently in one direction and when the intruding group spins cordage consistently in the opposite direction. Intrusion into the area is marked by the sudden occurrence of a few anomalous villages that spin cordage consistently in the opposite direction.

Archaeological examples of this pattern are found in the Kanawha valley and adjacent sections of the Ohio valley during the Late Woodland period. Hamlets in this area (e.g., Woods, Niebert) comprise the Woods complex and are predominated by pottery marked with Z-twist cordage. At A.D. 600, the Childers site, a large Newtown phase village which is predominated by S-twist cordmarked ceramics, appeared without precedent in the area. Most Newtown phase villages are concentrated further west, from southern Ohio to central Kentucky. After Childers was abandoned, only Woods complex hamlets and rockshelters with Z-twist cordmarked pottery again occurred in the immediate area. Later, about A.D. 1200, the Woods complex developed into a local Fort Ancient complex, which also had primarily Z-twist cordmarked pottery. Thus, a homogeneous local cordage tradition with strong temporal continuity for over 800 years was apparently interrupted briefly by a Newtown-phase population intrusion.

Replacements. Larger-scale population replacements over a region can be identified and distinguished from in situ cultural developments with data on cordage twist direction when information on more visible stylistic traits may be inconclusive. Abrupt changes in visible material traits can equally indicate either population replacement or rapid in situ social or ideological evolution that involves changing stylistic message priorities (see Rosenthal, Chapter 10). This ambiguity is evident in

common archaeological debates about replacement. In contrast, rapid changes in cordage twist direction over a region are expectable from only population replacement, given the poorly visible nature of the trait and its passive mode of transmission.

The pattern of change in cordage that is produced by replacement can also be distinguished from that produced by in situ shifts in cordage spinning for a given fiber type. In the latter case, change is expected to be slow, reflecting stochastic drift, which can eventually lead to homogeneity. This will occur only when a mixture of spin directions initially were used.

An example of cordage indications of population replacement is found in the Woodland–Fort Ancient transition in eastern Kentucky. In this area, Late Woodland villages are characterized by sandstone-tempered Levisa Cordmarked and Blaine Cordmarked pottery, which almost always have S-twist cord marking. This regional tradition ended abruptly when Woodside phase Fort Ancient villages of the Late Prehistoric appeared. The latter are predominated by shell-tempered pottery with Z-twist cordmarking (Table 9-4, Figures 9-8, 9-9).

Overlapping Settlement Systems

Sites of different functions within a single settlement system of a local band or tribal village can differ greatly in content and structure. This condition makes it difficult to reconstruct the system and its member sites—a problem that Binford (1983:143) sees as one of the most fundamental in archaeology. One kind of data that sometimes can be used to overcome this problem is the spin direction of cordage and cord marked ceramics. When the cordage or ceramics of neighboring local bands or tribal villages are distinct in their spin directions, the sites of various functions, content, and structure that belong to each settlement system of each local band or tribal village can be determined by cordage spin direction.

Cordage data can also be used to define the spatial overlap of settlement systems of neighboring local bands or tribal villages. Two kinds of overlap are possible. Different local bands or tribal villages can use the same logistics—extractive sites alternately through time, or local bands may join together temporarily at a logistics—aggregation site. In either case, the shared sites will contain both S- and Z-spun cordage in significant proportions, if the neighboring groups spin cordage in different directions. This pattern differs from the expected regional pattern for recruitment between societies (p. 326) in that it pertains to logistics sites rather than base camps or villages.

An example of the pattern of mixed S- and Z-spun cordage within a logistics site used by multiple tribal societies is found at Meadowcroft rockshelter (Maslowski 1984:58). Meadowcroft is a logistics camp located in the upper Ohio valley at the interface between two Woodland archaeological phases, Fairchance and Watson. Fairchance phase villages tend to occur south of Wheeling along the Ohio River, and are characterized by the consistent use of 2 ply, S-twist cordage. Villages of the Watson phase tend to occur north of Wheeling in northern West Virginia and western Pennsylvania, and are characterized by the consistent use of 2 ply, Z-twist cordage. In contrast, the Woodland component of Meadowcroft rockshelter has significant proportions of cordage of both twist directions: 62% 2-ply, Z-twist and 38% 2-ply, S-twist. These regional and intrasite patterns suggest that the shelter was used by persons of both phases, alternately over time, and more so by persons of the Watson phase. Significantly, Meadowcroft is geographically closer to the Watson region.

An example of a possible logistics—aggregation site having significant mixed proportions of two passive stylistic traits, which were used to reconstruct the aggregation of local bands, is the Lindenmeier Paleo-Indian site (Wilmsen 1973). Flint-knapping rather than cordage traits were used.

In conclusion, spatial patterning in the cordage attribute of initial spin direction can be used to reconstruct a number of cultural processes or conditions because it is largely a passive traditional pattern that, once learned, is retained through life. Reconstructing learning pools requires that natural predispositions of some raw materials to spin in different directions, variation due to handedness and belief systems, and artifact exchange be considered. Moreover, the scale of the learning pool over

which spin direction is largely homogeneous depends on historical context-specific factors; not all learning pools will be so distinguished. Also, if historical factors have led to the social units of interest using both spin directions in significant frequencies, then spin direction cannot be used as easily to track recruitment between units, population intrusions, population replacement, and the spatial overlap of settlement systems. Finally, to reconstruct these processes and conditions, it is important to consider both intrasite and regional patterning, and both spatial and temporal patterning, in spin direction.

The Fabric Data Set

In this and the subsequent section, we turn to fabrics, some specific processes and conditions that they are useful for reconstructing, and further development of middle-range theory.

Data on the formal variation of Middle Woodland fabrics from the Scioto drainage in southern Ohio were collected by Hinkle (1984) and reanalyzed here by Carr. A total of 389 fabric fragments from nine archaeological sites, comprised of earthworks and/or burial mound groups, were studied. Of these, 151 fragments from seven sites (Figure 9-11) had enough information on formal variation to be useful. The fragments appear to represent approximately 76 independent fabrics, which were taken as the analytic observations used in this study (Table 9-5), in contrast to those used in previous analyses (Carr and Hinkle 1984; Hinkle 1984). Cane mats were excluded from consideration. Each specimen was examined for a large number of discrete and continuous attributes, which vary in their position in a manufacturing decision hierarchy and their visibility (Tables 9-2 and 9-3). The seven sites span the period of approximately A.D. 50 to 350.

The sample is comprised of all or the great majority of extant fabrics from each site. Nevertheless, they pose four limitations for statistical and behavioral inference. First, sample sizes are unbalanced among sites. About 75% of the specimens come from Seip and Hopewell, whereas Ater, Rockhold, and Russell Brown are represented by only one to three specimens. Consequently, the diversity of weaves that are documented for each site is differentially constrained by sample size. Second, the samples represent only certain behavioral contexts in which preservation occurred. Specimens were preserved through carbonization in crematory areas or charnel houses, or through their association with copper artifacts, such as breast plates or celts, within burials. Third, the fabrics varied in their functions but these are known for only about half of the specimens. Fabrics were used as burial shrouds, an ornate burial blanket, a burial canopy that served as a structural element of a tomb, bags that contained elaborate copper artifacts, and for unspecifiable purposes. The small number of specimens of known function prohibited our statistically assessing whether functional classes were differentiated formally and our doing separate stylistic analyses for each class. Consequently, the fabric variations over space that are documented below could represent functional as well as social or personal level processes. However, within the limits of the data, no evidence of this potential problem was found (Hinkle 1984). Also, certain analytic steps were taken to minimize its possible effects. Fourth, different functional classes probably differed in their visibility during mortuary rituals and are not necessarily comparable in their potential for communicating social or personal level messages.

Geographic and temporal patterns in the form of Ohio Hopewell fabrics are summarized in Table 9-6, based on more specific numeric data presented in Table 9-7. The structure of the data in Table 9-7 reflects the structure of fabric manufacturing decisions, which is not fully paradigmatic. Thus, some attributes logically pertain to and are presented for only certain weave variations and specimens, rather than all weave variations and specimens. For example, attribute 9, the shape of interwarp and interweft spaces, is relevant to only the spaced weave variations, 1, 2, and 11 (Table 9-2 and p. 306), not compact variations. Also, for some attributes, some sites are not listed because they do not have weave variations to which those attributes are relevant.

Finally, note that geographic patterns of attribute states among sites are defined only within each weave variation, rather than considering all weave variations. This method of analysis helps to

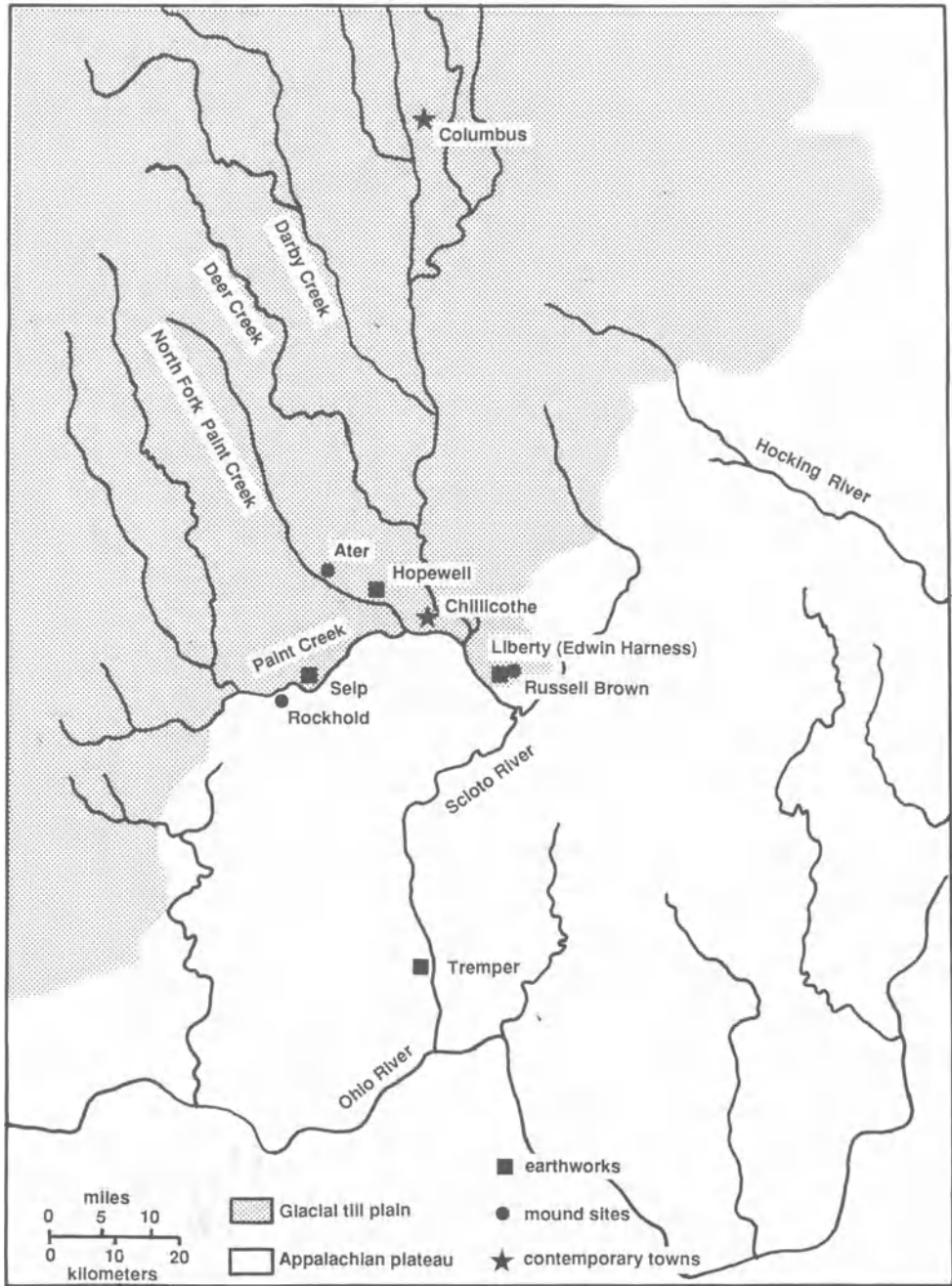


Figure 9-11. Ohio Hopewell earthworks and mounds having fabrics that were analyzed. Shaded area is glaciated terrain.

Table 9-5. Independent Fabrics of Different Weave Variations from Ohio Hopewell Sites

Site	Weave variation ^a											
	15	11	1	2	4	9	16	14	10	13	3	Total
<i>Early Middle Woodland Sites^b</i>												
Tremper earthwork	0	0	2	0	1	0	0	0	0	0	5	8
<i>Middle Middle Woodland Sites</i>												
Seip earthwork	0	5	15	4	0	0	0	0	2	0	0	26
Hopewell earthwork	1	1	3	5	0	0	1	18	0	1	1	31
Liberty earthwork, Edwin Harness mound	0	0	4	2	0	0	0	0	0	0	0	6
Rockhold mound	0	0	0	1	0	0	0	0	0	0	0	1
<i>Late Middle Woodland Sites</i>												
Russell Brown, mound 3	0	0	1	2	0	0	0	0	0	0	0	3
Ater mound	0	0	0	1	0	0	0	0	0	0	0	1
Total	1	6	25	15	1	0	1	18	2	1	6	76

^aWeave variation numbers are those used in Hinkle's (1984) data matrix. The weaves are described in Table 9-2 and the text. Variations 5 and 6 are not tabulated because they occurred only among cane mats, which were excluded from the analysis.

^bSites have been ordered into the relative time periods of Early, Middle, and Late Middle Woodland by Prufer (1968) on the basis of about 20 radiocarbon dates and material cultural similarities. The carbon dates suggest that the earthworks were used probably for centuries, so the sequence pertains more to the starting dates of occupation of the sites than to differences in their average ages or their durations of use.

minimize any effects that variation in fabric function, which is often not known, might have had on the geographic distribution of attribute states, and emphasizes other interesting sociocultural and personal sources of variation in the data.

Processes Responsible for Spatial Patterning in Fabric Formal Variation

In this section, we continue to build and illustrate middle-range theory for interpreting formal variation in fabrics. Theoretically expectable relationships between the absolute physical visibility of fabric attributes and their geographic distribution, as outlined by the unified theory of design (Carr, Chapter 7), are illustrated with data from Ohio. Also, information on the visibility of attributes, their positions in the decision and production hierarchies, and their geographic distribution are used with contextual data to infer some specific processes and conditions that the attributes reflect. Finally, analysis of the data sheds new light on the spatial scale and organization of Hopewell social units and on the nature of alliances among them.

Parallelism of the Attribute Visibility and Geographic Distribution Hierarchies

The unified theory of artifact design postulates that, as a first approximation, there is a strong correlation between the spatial expanse of an attribute's states and its absolute physical visibility. This correlation derives from the more fundamental relationships of both attribute spatial expanse and attribute visibility to the size of the social unit that the attribute reflects. It also derives from other factors that relate to social unit size (e.g., artifact viewing distances, the importance of social units of different sizes and their messages to system survival, the half-lives of social units of different sizes; Carr, Chapter 7: Figure 7-10). The correlation is strengthened if artifacts were not exchanged, if social messages were given priority over personal ones, and if the society was egalitarian.

Table 9-6, columns 2 and 3, illustrates this principle. Highly to moderately visible attributes

Table 9-6. Comparison of the Visibility and Geographic Distribution of Some Ohio Hopewell Fabric Attributes

Attribute ^a	Approximate visibility level	Geographic and temporal distribution of alternative attribute states	Assigned probable behavioral meaning
1. Size of fabric	1, high	No data	No data
2. Shape of fabric	1, high	No data	No data
3. Color and sheen as determined by material and dyes	2, high	No data	No data
4. Spacing of element(s)	3, moderate	Regional differentiation of major earthworks and minor sites: (Hopewell, Seip, Tremper) vs. (Harness, Russell Brown?) vs. (Ater, Rockhold)	Sociopolitical: panethnic group social stratification; active
5. General textural coarseness	4, moderate	Middle Middle Woodland earthworks in Paint Creek vs. Scioto valley vs. Early Middle Woodland earthwork: (Hopewell, Seip) vs. (Harness) vs. (Tremper)	Social: ethnic group distinction, temporal distinction; active or passive
6. Textural directionality of spaced weaves	4, moderate	Middle Middle Woodland earthworks in Paint Creek vs. Scioto valley vs. Early Middle Woodland earthwork: (Hopewell, Seip) vs. (Harness) vs. (Tremper)	Social: ethnic group distinction, temporal distinction; active or passive
7. Span between weft "band" elements of spaced weaves	5, moderate	Middle and Late Middle Woodland earthworks and mound sites in North Fork vs. South Fork of Paint Creek vs. Scioto valley vs. Early Middle Woodland earthwork: (Hopewell, Ater) vs. (Seip, Rockhold) vs. (Harness, Russell Brown) vs. Tremper	Social: local group distinctions, active or passive; temporal distinction, active or passive
9. Textural directionality of spaced weaves	6, moderate	Early and Middle Middle Woodland Earthworks in North Fork vs. South Fork of Paint Creek vs. Scioto valley: (Hopewell) vs. (Seip) vs. (Harness, Tremper)	Social: local group distinctions, active or passive

10. Textural directionality of compact weaves	7, moderate	Middle Middle Woodland earthworks in North Fork vs. South Fork of Paint Creek; vs. Early Middle Woodland earthwork: Hopewell vs. Seip vs. Tremper	Social: local group distinctions; active or passive; temporal distinction, active or passive
12. Warp and weft element absolute diameters	9, poor	Regionally random distribution (small intersite variation relative to intrasite variation) for Middle and Late Middle Woodland earthworks and mound sites; vs. Early Middle Woodland earthwork: (Hopewell, Ater, Seip, Rockhold, Harness, Russell Brown) vs. Tremper	Personal: passive interaction for Middle & Late Middle Woodland. Social or personal: passive temporal distinction of Middle and Late vs. Early Middle Woodland
13. Warp and weft element relative diameters	10, poor	Regionally random distribution among all earthworks and mound sites	Personal: passive interaction
14. Absolute direction of twist of final ply level of warp and weft elements	11, poor	Regionally uniform distribution among all earthworks and mound sites	Personal: passive interaction
15. Relative direction of twist of final ply level of warp and weft elements	12, poor	Regionally uniform distribution among all earthworks and mound sites.	Personal: passive interaction
16. Absolute twist tightness of final ply level of warp and weft elements	13, poor	Regionally random distribution (small intersite variation relative to intrasite variation) for Middle and Late Middle Woodland earthworks and mound sites; vs. Early Middle Woodland earthwork: (Hopewell, Ater, Seip, Rockhold, Harness?, Russell Brown) vs. Tremper	Personal: passive interaction for Middle & Late Middle Woodland. Social or personal: passive temporal distinction of Middle and Late vs. Early Middle Woodland
17. Relative twist tightness of final ply level of warp and weft elements	14, poor	Regionally random distribution, no interpretable pattern: (Hopewell, Tremper) vs. (Seip, Harness) vs. (Ater, Rockhold, Russell Brown)	Personal: passive interaction

^aAttribute definitions are given in Table 9-3.

Table 9-7. Geographic Patterning of Fabric Attribute States Shown in Table 9-6

Attribute		Geographic pattern			
4. Spacing of elements		Spaced weaves:		Compact weaves:	
Hopewell		Variations 1, 2, 11, 16		Variations 3, 13, 14, 15	
Seip		Variations 1, 2, 11		Variation 10	
Tremper		Variation 1		Variations 3, 4	
vs?					
Harness		Variations 1, 2		—	
Russell Brown		Variations 1, 2		—	
vs.					
Ater		Variation 1, only		—	
Rockhold		Variation 1, only		—	
(The small mounds of Fortney in the Miami drainage, and Rutledge in the Muskingham drainage, like Ater and Rockhold, have variation 1, only. The samples from Fortney and Rutledge are small: only 1 and 2 pieces, respectively.)					
5. General textural coarseness: average number of threads/cm for spaced weaves					
	Warp			Weft	
Variation	1	2	11	1	2
Hopewell	8.5 ± .70 (n = 2)	9.8 ± 4.6 (n = 4)	5.0 (n = 1)	2.5 ± .70 (n = 2)	3.8 ± 2.4 (n = 4)
Seip	8.8 ± 5.3 (n = 14)	11.6 (n = 1)	5.8 ± 3.1 (n = 5)	7.8 ± 5.5 (n = 14)	4.7 (n = 1)
vs.					
Harness	6.2 ± 2.7 (n = 4)	5.0 ± 4.2 (n = 2)	—	2.5 ± .57 (n = 4)	2.5 ± 2.1 (n = 2)
vs.					
Tremper	11.5 ± .70 (n = 2)	5.5 ± .70 (n = 2)			
Values for mound sites not relevant at this hierarchical level:					
Ater	—	8.0 (n = 1)	—	—	2.0 (n = 1)
Rockhold	—	10.0 (n = 1)	—	—	3.0 (n = 1)
Russell Brown	15.0 (n = 1)	11.0 ± .15 (n = 2)	—	7.0 (n = 1)	4.2 ± 2.6 (n = 2)
6. Textural directionality of spaced weaves: orientation of elements					
	Oblique weaves:		Horizontal/vertical weaves:		
Hopewell	Variations 11, 16		Variations 1, 2		
Seip	Variation 11		Variations 1, 2		
vs.					
Harness	—		Variations 1, 2		
Tremper	—		Variation 1		
Values for mound sites not relevant at this hierarchical level:					
Ater	—		Variation 2		
Rockhold	—		Variation 2		
Russell Brown	—		Variations 1, 2		

(continued)

Table 9-7. (Continued)

Attribute		Geographic pattern		
7. Span between weft “band” elements of spaced weaves				
		Variation 2		
		Very widely spaced (1–2 elements/cm) ^a	More closely spaced (≥3 elements/cm)	
Seip			+	
Rockhold			+	
vs.				
Hopewell	+		+	
Ater	+			
vs.				
Harness	+		+	
Russell Brown	+		+	
vs.				
Tremper				
			Variation 1	
		Very widely spaced (1–4 elements/cm)	Moderately spaced (5–7 elements/cm)	More closely spaced (8–18 elements/cm)
Seip	+		+	+
vs.				
Hopewell	+			
vs.				
Harness	+			
vs.				
Russell Brown			+	
vs.				
Tremper			+	
9. Textural directionality of spaced weaves: space shape measured as ratio of warp elements/cm. per weft elements/cm., averaged over all specimens.				
		Variation 1	Variation 2	
Hopewell	3.4 (n = 2)		2.6 (n = 4)	
vs.				
Seip	1.1 (n = 14)		2.5 (n = 1)	
vs.				
Harness	2.5 (n = 4)		2.0 (n = 2)	
Tremper	2.1 (n = 2)		2.5 (n = 1)	
10. Textural directionality of compact weaves: orientation of elements				
	Weaves with angled elements	Weaves with horizontal/vertical elements with vertical bias	Weaves with horizontal/vertical elements with no directional bias	Weaves with horizontal/vertical elements with horizontal bias
Hopewell	Variation 15 (3% of n = 31)	Variation 14 (58% of n = 31)		Variations 3, 13 (3%, 3% of n = 31)
vs.				
Seip			Variation 10 (13% of n = 26)	
vs.				
Tremper	Variation 4 (12% of n = 8)			Variation 3 (62% of n = 8)
The remaining sites have only spaced weaves and are not relevant at this hierarchical level.				

(continued)

Table 9-7. (Continued)

Attribute		Geographic pattern					
12. Warp and weft element absolute diameters (mm.)							
		Warp			Weft		
Variation		1	2	11	1	2	11
Hopewell		0.6 ± 0.0 (n = 2)	1.2 ± .49 (n = 5)	1.1 (n = 1)	1.1 ± .35 (n = 22)	1.1 ± .49 (n = 5)	
Ater		—	1.1 (n = 1)	—	—	0.88 (n = 1)	—
Seip		.86 ± .41 (n = 14)	1.3 ± .96 (n = 2)	.91 ± .37 (n = 5)	0.8 ± .36 (n = 14)	1.6 ± 1.4 (n = 2)	1.6 (n = 1)
Rockhold		—	.84 (n = 1)	—	—	.54 (n = 1)	—
Harness		.82 ± .31 (n = 4)	.74 ± .33 (n = 2)	—	.97 ± .16 (n = 4)	.88 ± .28 (n = 2)	
Russell Brown		1.0 (n = 1)	.86 ± .08 (n = 2)	—	.40 (n = 1)	.71 ± .29 (n = 2)	
vs.			—	—		—	
Tremper		.45 ± .07 (n = 1)			.63 ± .04 (n = 2)		
13. Warp and weft element relative diameters measured as a ratio of their absolute diameters							
Variation		1	2				
Hopewell		.57 (n = 2)	1.1 (n = 5)				
Ater		—	1.2 (n = 1)				
Seip		1.1 (n = 14)	.81 (n = 2)				
Rockhold		—	1.6 (n = 1)				
Harness		.85 (n = 4)	.92 (n = 2)				
Russell Brown		2.5 (n = 1)	1.2 (n = 2)				
Tremper		.71 (n = 2)	—				
14. Absolute direction of twist of final ply level							
		Twist direction					
Hopewell		100% S (n = 31)					
Ater		100% S (n = 1)					
Seip		100% S (n = 26)					
Rockhold		100% S (n = 1)					
Harness		100% S (n = 6)					
Russell Brown		100% S (n = 3)					
Tremper		100% S (n = 8)					
15. Relative direction of twist of final ply level of warp and weft.							
All fabrics at all sites have warps and wefts twisted in the same (S) direction. (see attribute 14 for sample sizes)							
16. Absolute twist tightness of final ply level of warp and weft elements, measured in twists/cm.							
		Warp			Weft		
Variation		1	2		1	2	
Hopewell		8.5 ± 2.1 (n = 2)	7.1 ± 3.8 (n = 5)		6.1 ± 1.1 (n = 2)	6.6 ± 1.8 (n = 4)	
Ater		—	7.0 (n = 1)		—	6.0 (n = 1)	
Seip		8.0 ± 3.2 (n = 13)	8.0 ± 1.4 (n = 2)		7.2 ± 2.3 (n = 13)	6.0 ± 4.2 (n = 2)	
Rockhold		—	6.5 (n = 1)		—	8.0 (n = 1)	
Harness		8.0 ± 0.0 (n = 3)	3.6 ± 2.3 (n = 2)		7.0 ± 1.0 (n = 3)	2.8 ± 1.1 (n = 2)	
Russell Brown		8.0 (n = 1)	7.8 ± .31 (n = 2)		8.0 (n = 1)	8.1 ± .52 (n = 2)	
vs.							
Tremper		13. ± 1.4 (n = 2)	—		10. ± 0.0 (n = 2)	—	

(continued)

Table 9-7. (Continued)

Attribute		Geographic pattern	
17. Relative twist tightness of final ply level of warp and weft elements, measured as the ratio of their absolute twist tightness in twists/cm.			
Variation	1		2
Hopewell	1.4 (n = 2)	1.1	(n = 5)
Tremper	1.3 (n = 2)	—	
vs.			
Seip	1.1 (n = 13)	1.3	(n = 2)
Harness	1.1 (n = 3)	1.3	(n = 2)
vs.			
Russell Brown	1.0 (n = 1)	.96	(n = 2)
Ater	—	1.1	(n = 1)
Rickhold	—	.81	(n = 1)

^aSpacing categories defined by modes in frequency distributions.

(5–10), distinguish populations in different valleys. The more visible of these distinguish sites in the main Scioto valley versus sites in tributary Paint Creek, whereas less visible ones make a secondary distinction between sites in the two forks of Paint Creek. The least visible attributes (12–17), which pertain to the details of warp and weft element size and twisting, have alternative states that are distributed very locally—either randomly or clinally over space. Thus, the geographic expanse of alternative attribute states clearly decreases as their visibility decreases.

This pattern is expectable, minimally, in view that social messages were probably given priority in their formal expression in fabrics over personal messages—one of the assumptions behind the principle. The fabrics were used in the sacred domain of mortuary ceremonies, in which social messages would tend to be emphasized (Rosenthal, Chapter 10), rather than in profane spheres.

At the same time, the Ohio Hopewell were a rank society—a violation of one of the conditions that is assumed to be necessary for attribute visibility and spatial distribution to correlate strongly. The effect of this violation is seen in the data. The most highly visible fabric attribute (4) does not distinguish broad areas from each other but, rather, marks a panregional distinction between fabrics from major earthworks versus minor mound sites. This contrast apparently indicates a panregionally recognized and symbolized difference in social rank, rather than social unit size.

In sum, there is a fundamental parallelism between the hierarchies of attribute visibility and geographic distribution, just as there is between the visibility, manufacturing decision, and production step hierarchies. This systematic ordering of attributes allows more specific insight into their behavioral and other processual meanings, to which we now turn.

Assigning Behavioral Meanings to Fabric Attributes

Based on the order of Ohio Hopewell fabric attributes within the visibility, manufacturing decision, and production step hierarchies, the geographic distribution of the attributes' alternative states, the correlation between attribute visibility and distribution, and contextual and historical information, some specific behavioral meanings can be assigned to the attributes (Table 9-6, column 4). These are more specific than the social versus personal-level distinctions and active versus passive distinctions that could be made with information solely on the visibility, manufacturing decision, and production step hierarchies (Table 9-3). We begin with the meaning of the least visible attributes and work toward the more visible.

The least visible attributes (12–17) describe the details of warp and weft element size and twist. As expected from their poor visibility, all of the traits are geographically distributed in some manner that indicates passive interaction and enculturation processes among individuals within learning pools of various scales: random variation over space, with as much variation within sites as between; random variation among sites over space with consistency within sites; and uniformity over the entire Scioto drainage.

The regionally uniform distribution of warp and weft twist direction (100% S-twist; attribute 14) is a good example of how a “style cline” can have different appearances, depending on the number of alternative states that the style attribute can take, as described in the unified theory of design (Carr, Chapter 7: Figure 7-11). In this example, twist direction takes only two possible states, S and Z. Thus, a learning pool that is defined with respect to this attribute can be characterized by only one or the other state, uniformly over its expanse. In contrast, a continuous, clinally distributed attribute would vary directionally over the learning pool.

Two of the poorly visible warp and weft attributes (12, 16) distinguish the early Middle Woodland earthwork, Tremper, at the mouth of the Scioto, from the other, middle and late Middle Woodland earthworks and mounds further upstream. This temporal and/or spatial distinction would have been passive, given the poor visibility of these traits, but does correlate with similar distinctions made with more visible attributes (5, 7, 10) which could have actively symbolized social group differences.

The increasingly more visible attributes (5–10) distinguish sites within increasingly larger regions: the North Fork versus the South Fork of Paint Creek; the North Fork versus the South Fork versus the Scioto valley; and finally Paint Creek as a whole versus the Scioto. The smaller, stylistically distinguishable areas of the North Fork, South Fork, and the Scioto probably correspond to the territories of different local groups, each of whom may have used one major earthwork (e.g., Hopewell, Seip) for burying high-ranking or prestigious persons and multiple smaller mound groups (e.g., Ater, Rockhold) for burying primarily the lower ranking, majority of their populations. Formal distinctions in fabric among these local groups could have been active or passive, depending on the contexts of fabric use and the distances from which fabrics may have been viewed, if they were displayed. If the formal distinctions were active, they could have symbolized either within-group cohesion or between-group differentiation or both, depending on the social composition of the target audiences. The larger, stylistically distinguishable areas of Paint Creek as a whole versus the Scioto valley probably correspond to the territories of ethnic groups that encompassed multiple earthwork local groups and that were internally and/or externally defined. Again, the formal distinctions between these two areas might have been active or passive, depending on the context of fabric use and the distances over which the fabrics may have been viewed. The fact that different local groups and regional groups are distinguished by certain fabric attributes suggests that fabrics either were not exchanged, or not exchanged to a degree where between-group stylistic differences were leveled.

The most visible attribute, element spacing, distinguishes earthworks where higher ranking persons were buried from simpler mound groups of the kind where the majority of Hopewell peoples may have been buried. Elemental spacing appears to represent a regional symbolism for actively messaging differences in prestige. It holds for two or perhaps three different earthwork local groups in three different areas: the North Fork of Paint Creek (Hopewell earthwork vs. Ater), the South Fork of Paint Creek (Seip earthwork vs. Rockhold) and perhaps the southern Scioto valley (Tremper earthwork). Although it is not clear whether the paired, contrasting sites of Hopewell and Ater, or of Seip and Rockhold, were strictly contemporaneous, it is assumed that the members of each pair represent the different components of single mortuary systems which had continuity through the Middle Woodland.

The reconstruction of Hopewell mortuary systems as being diversified, with different segments of local populations buried in different sites largely according to rank, differs from Greber's (1979) interpretation. She interprets each site as a separate society and does not link the burial populations of earthworks and simpler mound groups. Greber's interpretation is not easily supported by the stylistic data just described.

The Evolution of Alliance Strategies in Woodland Ohio

With this understanding of the probable behavioral meanings of formal variation in Ohio Hopewell fabrics and the delimiting of Hopewell social units, it becomes possible to ask more interesting anthropological questions. Here we turn to the final of our six examples of specific processes or conditions that spatial patterning in formal textile variation can reflect: ceremonial aggregation of societies in the course of alliance development.

Regional alliance networks in egalitarian societies usually widen during periods of increasing subsistence, social, demographic, or natural environmental risks at the local level. Alliances between local groups can serve directly or indirectly as the channels by which local subsistence inequities are leveled, population is redistributed, and political safety is secured.

It can be argued theoretically and demonstrated ethnographically that in landscapes of increasing risk, alliances in evolving tribal societies develop in a regular way that is typical of all adaptive systems (Carr 1992). Systems adapt to their environment and themselves by activating various mechanisms in an "ordered sequence" (Slobodkin and Rappaport 1974). Initial responses are behavioral, costly in activity and energy but, being structurally noncommittal, are reversible and allow the system to retain evolutionary flexibility. As perturbations become more intense, continuous, and predictable, adaptation is accomplished through structural changes. These release the system from costly behavioral responses, but commit it to a narrower range of future adaptive options. Similarly, alliances are initiated with reversible economic transactions and political mechanisms such as the exchange of easily replaced goods, the exchange of valuables, and networks of cooperation organized around Big Men. Alliances are escalated to longer-term, less reversible social structural, political, and economic commitments through intermarriage, and may be culminated with binding sacred agreements, such as the burial of the dead from different communities in a common cemetery. Thereafter, tribes may formally crystallize as stable, bounded groups with the development of sodalities and a common sense of ethnicity.

Archaeological evidence from southern Ohio or the greater Midwest suggests that many of these adaptive strategies were exploited, and in roughly their predicted order, in response to documented increases in subsistence and political risks. Alliances were initiated and maintained in the Late Archaic with the exchange of utilitarian lithic resources and shell and copper valuables, developed in the Early Woodland with Big Man adaptations, and were probably buttressed in some way during the Middle Woodland through mortuary rituals. During the Late Woodland, structural adaptive strategies stronger than alliances arose. People nucleated into large villages, which were made possible perhaps through the evolution of sodality organizations and ethnic coherence.

One aspect of this sequence which remains unclear is whether Ohio Hopewellian societies went beyond economic and sociopolitical adaptive mechanisms and attempted to stabilize alliances between local groups more permanently through religious sanctification. Specifically, did the Hopewell bury the elite from multiple earthwork local groups together within single earthworks in order to create bonds of eternal trust or cooperation among ancestors on a spiritual plane, which in turn would have served as a template for worldly action? In Rappaport's (1979) terms, did Hopewellian earthwork burial rituals serve as an ecological regulator?

Two aspects of the fabric data speak to this question. First is the priority given by the Hopewell to different social messages as expressed stylistically. Of the fabric attributes for which we have information, the one that is most visible and that thus probably was given highest priority for expression—element spacing—apparently distinguishes status levels *within* local groups (Table 9-6). Local earthwork groups or regional ethnic groups, themselves, were distinguished by somewhat less visible fabric attributes. This secondary priority given to messaging between-group differences suggests that competition among local groups probably was not continuously negotiated by behavioral strategies such as material exchange, political agreements among Big Men, or stylistic signaling of local group affiliation at times of aggregation. Instead, competition was probably ameliorated by more

permanent, structural alliance mechanisms such as intermarriage or joint burial. No firm conclusion can be drawn from this line of argument, however, because stylistic information is missing on the most highly visible attributes of fabric color and shape, and the processes that they reflect.

The second aspect of the data that is relevant to whether joint burial of the elite was used as an alliance strategy is the diversity of fabric forms within earthworks and the sharing of forms between them. Of the several fabric attributes that have been interpreted as reflecting local group or regional ethnic group distinctions (Table 9-7, attributes 5–10), two were tabulated in a way that allowed their diversity to be assessed and were observed for enough items to make their analysis meaningful. These are: general textural coarseness for weave variations 1 and 2, and the span between weft band elements for weave variations 1 and 2 (Table 9-7, attributes 5, 7). Attribute 5, textural coarseness, discriminates earthworks and perhaps regional ethnic groups in Paint Creek (Seip, Hopewell) from those in the Scioto valley (Harness, Tremper). Nevertheless, for weave variation 1, the range of this attribute at Seip includes the textural coarseness of fabrics at Hopewell, Harness, and Tremper. This could indicate either joint burial of elite and their fabrics from different ethnic groups at Seip, or the exchange of fabrics between the Seip group and other ethnic groups. Similarly, for weave variation 2, the ranges of textural coarseness of fabrics at Hopewell and Harness overlap with each other, and include those of Seip and Tremper. This suggests joint burial of elite and their fabrics from different ethnic groups at Hopewell and Harness, or the exchange of fabrics between Hopewell, Harness, and other ethnic groups.

Attribute 7, span between weft band elements, distinguishes earthworks in the North Fork of Paint Creek (Hopewell) and the South Fork of Paint Creek (Seip), and the Scioto valley (Harness, Tremper). For weave variation 1, this attribute is very diverse at Seip, having a range that includes element spans at Hopewell, Harness, and Tremper. For weave variation 2, the range of element spans at Harness and Hopewell includes element spans at Seip. These patterns, too, could indicate joint burial of elite and their fabrics at Seip, Harness, and Hopewell, or the exchange of fabrics between these and other local groups.

In sum, the position that Ohio Hopewell local groups or regional ethnic groups maintained alliances among each other structurally by burying their elite together in single earthworks and by sanctifying earthly ties remains a viable, but unproven reconstruction of Hopewell interaction. Important to the methodological purpose of this chapter, *this issue could not have been investigated accurately without assigning specific behavioral meanings to a hierarchy of formal fabric attributes and without selecting for analysis those particular attributes that appear relevant to local group and ethnic group distinctions*. Had attributes pertinent to messaging status distinctions, or to interaction and enculturation processes among individuals been selected (4, 12–17, respectively), different geographic patterns would have been found and different conclusions would have been drawn. Thus, this case study of the Ohio Hopewell shows how middle-range theory for assigning specific behavioral meanings to specific formal attributes of artifacts is essential to reconstructing prehistory.

CONCLUSION

Cordage and fabrics can evidence many behavioral processes and historical events. However, to interpret variability of cordage and fabric requires the researcher to understand both the dynamics of their production and the kinds of messages or behaviors that can be actively coded or passively reflected in different aspects of their form. Essential to developing this understanding are behaviorally relevant textile systematics, which emphasize manufacturing decisions, production steps, and attribute visibility, as well as middle range theory that uses these criteria to map textile formal variation to behavioral and other processes. Consequently, in this chapter, we have reviewed and elaborated textile systematics, and have tested and illustrated a number of general principles of the unified middle-range theory of artifact design (Carr, Chapter 7) with textile data. In addition, the accurate interpretation of

textile variability requires information on the context, and preferably the history, of production and use of textiles, including the geographic and/or temporal distributions of alternative attribute states, the composition of potential audiences, viewing distances, social message priorities, and the overall sociocultural and ecological adaptive milieu that encourages or constrains the various roles that textiles may play. Using these context-specific data requires that the archaeologist be a student of prehistory as well as culture process and materials science. The analyses presented here of Woodland and later cordage and fabrics from the Ohio drainage move toward such a contextual approach. Finally, based on these analyses, we have offered some new reconstructions of prehistoric social and linguistic units and evolutionary processes in the Ohio drainage.

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Chapter 10

Iroquois False Face Masks

The Multiple Causes of Style

BERYL ROSENTHAL

Archaeological literature of the last decade (e.g. Wobst 1977; Braun and Plog 1982) has revived the old idea that there is a highly predictable relationship between artifact styles and the behaviors that they reflect. The desire of archaeologists for a simple relationship that does not vary with context is understandable, for it would neatly package the jigsaw puzzle of archaeological remains. However, in an attempt to create a theoretical construct of this kind, archaeologists have encountered the polar problems of simplistic and slavish use of the ethnographic parallel, and rejection of the richness of ethnographic reality. Both problems occur in ethnoarchaeology. Our tendency is to read both more and less into material culture than may actually be there—what Macauley (1979) calls the “Motel of the Mysteries” problem. Sackett’s (1985) criticism of Weissner’s interpretation of stylistic variation among Kalahari San projectile points also calls attention to this problem. It is easy to lay a behavioral interpretation upon a stylistic data set yet often difficult to extract one naturally.

This chapter assumes the guiding principle of cultural relativity, which dissolves the idea of any single, universally applicable relationship between style and overt or covert cultural behavior. From this premise, five issues are explored, most of which are themes of this book.

First, there are a multiplicity of factors that affect style and that are reflected in it. Recent literature has stressed that style communicates social and personal identities (Wobst 1977; Weissner 1983; Voss and Young, Chapter 3). Much of style is identity related. However, there are a number of other factors that can be signaled by style and stylistic variation. Among these are religious–mythological themes, personal dreams, the dynamics of acculturation, and the economic imperatives that inevitably follow social change. Beyond communication, style can also reflect choice within functional equivalents (Sackett 1982), manufacturing and compositional constraints (Friedrich 1970), and the particular social context (Hodder 1982). The perspective on style that I develop here finds positive aspects in each of these approaches and calls for their combination into a more holistic and ethnographic viewpoint (see also Roe, Chapter 2; Carr, Chapter 7).

Second, clearly such an encompassing perspective requires means for identifying which factors are relevant in any particular case. Toward this end, I stress the importance of analyzing the styles of

multiple rather than single artifact classes (see also Roe, Chapter 2; Neitzel, Chapter 12; Morris, Chapter 13). I also encourage exploring each class in multiple contexts in order to reveal repetitive themes, which can be termed the “fabric” or “pattern” of cultural life (Hodder 1982; Toelken 1979). These strategies are absolutely critical in archaeological studies, which lack the insights provided by informant behavior and interviewers, but are also helpful in ethnographic contexts.

Third, the relations of the communicative components of a style to their cultural and behavioral referents is to a considerable degree culturally and historically bound. As Barth (1969:14) points out, “one cannot predict from first principles which (cultural) features will be emphasized and made organizationally relevant by its actors.” However, this does not imply, as Hodder (1982) has suggested, that the anthropologist must take a particularistic, Boasian approach without general rules for assigning meaning to form. At least two avenues for seeking some cross-cultural regularity remain open. One is the relationship between the meaning of a design attribute and its position in a formal hierarchy of attributes, as explored in the essays by Carr (Chapter 7), Voss and Young (Chapter 3), Pryor and Carr (Chapter 8), and Carr and Maslowski (Chapter 9) in this book. The second, to be discussed later, is the relationship between certain classes of cultural contexts and whether classes of messages are given or not given priority for expression in material culture (see also Carr, Chapter 7). For example, in sacred compared to profane contexts, various social and personal identities or needs are likely to differ in the importance of their expression. In contexts where gender contrasts or class contexts are important, or in situations of acculturation, other identities, needs, or messages may be given priority for expression. Again, this approach stresses the importance of exploring contexts.

Fourth, in the course of discussing the multiple factors that can affect style, I consider some psychological processes that can lead to stylistic variation and change. These include dreaming as a source of inspiration, selective memory, artistic license, and other conscious and unconscious factors (see also Pryor and Carr, Chapter 8; Carr and Neitzel, Chapter 14). These factors *generate* stylistic variation. They are embedded within broader constraining processes, such as the culturally normative modes of expressing perceptions that are discussed by Washburn (Chapter 4) and systemic, selectionist forces that are discussed by Braun (Chapter 5), which provide direction to stylistic change.

Fifth, I briefly consider the temporal scales over which stylistic changes occur. Two kinds of changes can be distinguished: long-term, gradual change and short-term, rapid change. The different rates of change can reflect the different sets of factors that are responsible for them.

I will develop and illustrate each of these ideas using stylistic and related behavioral information that I have collected on masks of the ethnomedical Iroquois False Face societies. After a brief introduction to Iroquois culture and the role of the False Face society and its masks, I discuss the multiple contextual factors beyond social and personal identity that influence mask style: religious, social, psychological, and technological. Both stability and variation in mask style, as a product of stability and change in these factors, are considered. Finally, the effect of change along one dimension of context—the distinction between the sacred and the profane—is examined in detail and explored for its implications about long- and short-term stylistic change.

MASKS AND THEIR CULTURAL CONTEXTS

Masks have held the fascination of many cultures and have been used for thousands of years. They reflect not only the religious beliefs and heroes of the culture, but the persona of their wearers and makers as well. Their most common use in Western cultures is simply to disguise one's identity, to operate anonymously, as in the case of Halloween. However, the expressions “hiding behind a mask,” or, “his face masked his feelings” imply more than anonymity. There is also a connotation of falsehood, where the mask allows the individual to behave in a normally disapproved of manner. A criminal may wear a mask, and adolescent Halloween trick-or-treaters may engage in mischievous behavior (see Wallace 1959, 1969 on rites of reversal).

In non-Western societies, masking transcends the act of disguising the individual (Lommel 1981). A mask's overt function is to disguise the wearer so as to present an impression of a spirit, ancestor, or other supernatural personality. This can be seen in the fact that whereas Western societies limit the concept of a mask to a face covering, non-Western societies include the body covering or "costume" as an integral part of the "impression." The costume becomes critical when the individual portrays a particular supernatural–cosmological character who must be instantly recognizable to both the audience and the spirits.

Covertly, masks have deeper symbolic meanings and purposes. Lommel (1981) notes that all societies require a communication link between the public and the cosmological world. This is frequently facilitated by a shaman through trancing. Communication with the spiritual world is necessary to attempt control over natural forces and illness. To mimic the supernatural agents is to control or harness their power. This is best attained by the channeling actor removing him or herself from the daily profane existence and moving into the realm of the sacred, where the person literally "becomes" the spirit. The behavior of the individual must be consistent with that of the spirit, regardless of whether or not it is culturally inappropriate. The mask is thus the agent of transformation. Among Northwest Coast Indians, this transformation was acted out literally using masks which open up to reveal an interior mask. Thus, masks may physically as well as symbolically represent identity changes (Boas 1955 [1927]; Waite 1966; Lévi-Strauss 1982; Rosenthal 1986).

Many cultures use masks as agents of social control, as in the cases of Iroquois Longnose characters and Hopi Kachina dancers (Fenton 1937, 1956; Colton 1959:29–30; Sieber 1966:257–266). Masks may also serve as social purgatives. For example, Cherokee Booger masks are used to deal with social ills for which the Cherokee hold Euroamericans responsible (Speck 1950:24, 29). Masks may also be strictly theatrical, with no sacred or social control function. Balinese masks are used in this way to tell stories, some with historical validity, others strictly fanciful (Lommel 1981).

In each of these ways, using masks is the epitome of using style in material culture to communicate, manipulate, hide, or transform (Hodder 1982; Rosenthal 1986). Like clothing (Wobst 1977), they serve as an excellent medium for studying the relationships between stylistic variation and its determining factors. Masks are dynamic agents of society, subject to cultural changes. They and their style reflect the loss or introduction of cultural beliefs and/or practices. For example, contact with the "modern" world is reflected in the masks of traditional societies by the use of modern themes, materials, and tools. In the Mexican masking tradition, devil masks did not appear until after contact with the Spanish conquistadors and the introduction of Christianity (Cordry 1980). Also, "tourist art"—masks which have been produced for sale on the commercial market—are often more flamboyant, structurally less complex, and less traditional in their symbolism and production (see Roe, Chapter 2, on realms of protected deviation).

THE IROQUOIS AND THEIR MASKS

The Iroquois proper, or Six Nations Iroquois, is a political alliance of the Seneca, Cayuga, Onondaga, Oneida, Mohawk, and, after 1722, the Tuscarora nations. Their homeland once extended across New York State from the Genesee River near Rochester, to the Schoharie Creek near Schenectady, and from Lake Ontario to the Susquehanna Valley (Morgan 1962:40–41; Fenton 1978:296; Rosenthal 1986:9).

The Iroquois were originally corn, beans, and squash horticulturalists, augmenting their diet with a variety of game, fish, nuts, berries, and such (Fenton 1978:298; Rosenthal 1986:9). There was a distinct division of labor. Women exercised considerable control over societal matters, including household affairs, child rearing, horticultural activities, food distribution, and council decisions, to the extent that the Iroquois represent the premier example of matrilineality (Fenton 1978:314–315; Tooker 1978:426; Nowak 1979:95). Male concerns were external in nature, revolving around warfare,

hunting, and diplomacy. These generally involved extended absences and long distance traveling from the local community (Morgan 1962:12–21, 339–340; Fenton 1978:314–316; Tooker 1978:46; Nowak 1979:96–97). Kinship was matrilineal and residence was matrilocal. Several families related through females lived together in longhouses. The basis of political organization was a clan and moiety system (Morgan 1962:62–66; Fenton 1978:313; Tooker 1978:424–428).

Iroquois religion was based on belief in a Creator and his Evil Twin, as well as a number of lesser cosmological plant and animal spirits. Smoking or burning tobacco was the principle means of communicating with the spirit world. The ceremonial calendar revolved around agricultural and natural events (Morgan 1962:156–164, 182–183; Tooker 1970).

Medicine societies were important to Iroquois religion, especially prior to 1800 when the Handsome Lake revitalization movement began spreading among the Iroquois (Parker 1909; Mathews 1978:39). The societies existed to propitiate the spirits which controlled the well-being of the community. Parker notes that: "When an Indian is afflicted with some disorder which cannot be identified by the native herb doctors, the relatives of the patient consult a clairvoyant who names the ceremony . . . believed to be efficacious in treating the ailment. Sometimes several ceremonies are necessary, and as a final resort a witch doctor is called upon" (Parker 1909:184).

The False Face Society and Masks

The False Face Society is one of the most powerful Iroquois medicine societies. It uses masks carved of basswood or other soft wood. Other ritual paraphernalia includes staffs made of hickory or occasionally elm, and rattles handcrafted of snapping turtle shells and hickory or elm bark (Parker 1909:108; Fenton 1937:216; Blau 1967:256; Rosenthal 1986:11). Its ceremonies are divided into private and public rituals. Private ceremonies are home cure rites. They are performed whenever necessary at any time during the year for an individual patient.

Symptoms characterizing False Face sickness are generally limited to the upper face and torso. They include nosebleeds, toothaches, facial and body paralysis, facial swelling, inflamed eyes, tremors, hysteria, and the imagined feeling that a hair is lying across one's face. In addition, a cure may be required when a mask or mask-related theme is dreamed about (Fenton 1937:226; Blau 1966:569; Mathews 1978:46).

Curing rites involve the entry of the masked members of the False Face society into the patient's home or the ritual Longhouse. They are accompanied by loud banging on the side of the building, whinnying, and whistling. Hot coals and ashes are blown onto the head and neck of the patient in the curing rite. The cured patient becomes a *de facto* member of the medicine society. The person can have a mask of his own carved and take part in future curings.

The False Face Society also conducts two types of public ceremonies. Those that cleanse the village and effect group preventive medicine are performed in spring and fall. Regular calendric ceremonies occur during the Midwinter Ceremonies, which take place approximately five days after the new moon or New Year, generally at the end of January or early February. These complex rites have been described fully by Speck (1949) and Tooker (1970).

The balance of public versus private contexts of use of masks has shifted through time since European contact, affecting both the transmission of mask style and stylistic change. These topics are discussed in detail below.

False Face masks represent primarily mythological beings, the masks seen in dreams, the curing actions of a shaman, and disease symptoms of the victim. The masks are treated with awe, respect, affection, and great care in deference to their power. There are elaborate prescriptions regarding their use, storage, and transfer to new owners (Fenton 1937:230; Speck 1949:74; Howard 1961; Hendry 1964:368; Blau 1966:527–573; Rosenthal 1986:14; Thwaites 1896–1901 Vol. 13:231).

Even the carving of a mask is bound by tradition. Typically, a softwood tree is selected, generally basswood because of its inherent medicinal powers. Then tobacco invocations are made and the mask is carved literally into the living tree, and finally axed away (Fenton 1937:230–231; Hendry 1964:367;

Blau 1967:254; Herrick 1977:31; Mathews 1978:54–55; Rosenthal 1986:16). Once home, the back of the mask is hollowed out by burning or farrier's knives or, more recently, Swiss-made precision tools. Perforations are made for eyes, which are then ringed with shiny material, generally tin, copper, or brass. The masks are then painted. According to some informants, the masks are colored red if carved in the morning, black in the afternoon, and half-red, half-black if at noon. Other traditions indicate that the difference in coloration may have to do with representations of somewhat different cosmological characters. Finally, holes are drilled for head attachments, horsetails are added to represent hair, headthrows may be added to hide the identity of the wearer, and, in some communities, tobacco bags are tied into the hair, imbuing it with power (Rosenthal 1986:16–17). Pictures of the masks are not provided here in honor of the wishes of the Iroquois people.

For each kind of being or action that the masks represent, there are stylistic prototypes. These are varied, in turn, with their context of production and use, and idiosyncratically. Visible attributes such as coloration, mouth style, and facial orientation define the prototypes. Less visible attributes such as ears, or the addition of optional visible characteristics such as set-in teeth make a mask relevant for a particular person or context as one would expect (Carr, Chapter 7). It should be noted, however, that what may be considered highly visible or present in one community may be considered less so in others, such as wrinkling. This contextual variation is one source of style differentiation among reservations.

The Sample and Analytical Methods

The stylistic and behavioral data that are discussed here pertain to a sample of 550 False Face Masks which are housed in major museums in the United States and Canada. They represent collections from the Allegany, Cattaraugus, Tonawanda, Onondaga, Six Nations, Oka, St. Thomas, and related communities. The masks date largely from the late 19th to mid-20th centuries, but there are also a very few old 18th century masks. Additional masks from the Seneca Arts Project of the 1930s were examined, but were neither coded nor included in the final sample; these were used for comparative data due to their specialized nature. Thirty masks from a major Midwest collection were used to test the results of the study. Ethnographic work was done among the Six Nations Iroquois along the Grand River of Ontario and among the Oklahoma Seneca-Cayuga. Respondents were traditional carvers, ritual leaders, and elders in the Longhouse. Additional interviews were held with private collectors and art dealers on and off reservation communities.

The sample is heavily biased in favor of Seneca masks. This results from collection bias due to the appeal of the more traditionally made Seneca masks and their greater availability. Additional facets of the data are reported by Rosenthal (1986).

All of the traits coded and analyzed here are discrete (Tables 10-1, 10-2). Continuous data (anthropometric indices) were collected but used in only a supplemental manner. The discrete traits, being so visible, tend to pertain to active symbolic or iconographic processes rather than passive factors (Voss and Young, Chapter 3; Carr, Chapter 7). All traits represent a hierarchical decision-making and manufacturing process, primarily as a result of material, procedural, and representational constraints. For example, noses and mouths must be defined near the very beginning of the work because they protrude beyond the rest of the face and because the masks are carved in relief from a single piece of wood.

Stylistic patterns and trends in the data were revealed through visual, intuitive examination, crosstabulations, and cluster analyses, guided by insights provided by informants and the literature.

CONTEXTUAL FACTORS THAT INFLUENCE STYLE

A survey of the literature indicates that ethnographers have long thought that two main factors influence the style of False Face masks: representations of mythological characters and the dreams

Table 10-1. Initial Attribute Coding Categories

Identification number	Wood species ^a
Tribal affiliation	Mouth type
Reservation where collected ^a	+/- of teeth
Collector ^a	Material of teeth
Accession year ^a	Size (lxw) ^b
Collection year ^a	Length of forehead (to glabella) ^b
Carver ^a	Length of nose (glabella to base) ^b
Eye material	Width of nose (widest point) ^b
Number of holes for attachment to wearer	Length of mouth (protuberant points of lipline) ^b
Location of holes	Width of mouth (widest point) ^b
Color	Mouth to chin distance (from lower lip) ^b
Number of hanging/attached tobacco bags	+/- of hair ^a
Nose type	Color of hair
Chin type	Material of hair
+/- forehead "spine"	Carving techniques ^b
+/- number/location of wrinkles	Known product of Seneca Arts Project ^b
+/- supraorbital ridges	Indications of use ^b
+/- ears	Special features ^b

^a = dropped from final study (insufficient information or irrelevant)

^b = used for informal comparisons

Table 10-2. Final Coding Categories and Their Possible States

Category	State
Reserve	Allegany, Cattaraugus, Tonawanda, Onondaga, Six Nations, Oka, St. Thomas . . .
Eyeform	Round, ovate, square/rectangular, teardrop, semilunar, irregular/combination, unknown/unfinished, unknown/removed
Eye material	Tin, brass, copper, absent/paint, paper/cardboard/canvas, gum, not drilled, removed, questionable, unfinished, painted cardboard or paper
Holes	0-9+
Color	Red, black, black/red lips, red/black lips, half red/half black, brown, orange, unpainted/natural, red-black smudge/chip (possibly overpainted), brownish red (vice versa), questionable, other/aberrant
Spine	Questionable, +, -
Wrinkles/forehead	Questionable, +, -
Wrinkles/eye	Questionable, +, -
Wrinkles/cheek	Questionable, +, -
Wrinkles/mouth	Questionable, +, -
Wrinkles/chin	Questionable, +, -
Wrinkles/nose	Questionable, +, -
Supraorbital ridge	Questionable, +, -
Ears	Questionable, +, -
Mouth	Smiling, hanging, crooked, whistling, oval distended, square, bifunnelate, spoonmouth, modified distended, straight distended, duckbill, other/aberrant
Tongue	+, -
Teeth	+, -
Teeth material	Wood/attached, wood/freestanding, metal, bone/tooth, absent, questionable

of the individual patient (Blau 1966; Fenton 1937, 1956, 1978, personal communication; Rosenthal 1986). However, there are also other religious, social, and psychological factors that systemically interact to influence style and that became apparent in my research. These arise in the contexts of mask manufacture and use, which are themselves intertwined. In the following sections, I will discuss both the traditionally recognized and previously unrecognized factors that are critical to stylistic variation and change among False Face masks.

Some of the factors concern who the masks represent and directly lead to iconographic variation. The portraits of mythological characters or the patient are examples. Other factors, such as commercialization and psychological filtering during the creative process, have symbolic but not necessarily iconographic implications (see Plog, Chapter 11, for definition of this distinction).

Religious Factors

A variety of purely religious factors affect mask style. Representation of supernatural beings and circumstances told in myths is generally the most important and most universal factor, for these powers directly affect human existence. Also common are masks or False Faces seen in dreams, the curative actions of the healers, and the portraiture of victim–disease representation.

Mythic Supernatural Beings

A number of stylistic features of masks are varied in the process of representing supernatural beings. Among these are coloration, eye shape, eye material, nose and mouth shape, nose “bleeding,” wrinkle patterning, presence or absence of ears, the number of holes for the wearer’s head, and presence and kind of any inlaid material, such as sand or gravel, plasticene, or flint (Rosenthal 1986).

The struggle myth, the most universal among the Iroquois, tells of a confrontation between the Creator and the False Face over control of the Earth. To resolve their differences, they held a mountain moving contest. The winner would be the true controller-Creator. While the False Face’s back was turned, the Creator had a mountain come up behind him, and when the False Face felt the rock against his hunchback, he turned quickly, breaking his nose, and distorting his mouth. This is the mythic prototype for the crooked face styles. Some say his face went red with embarrassment and black with anger, creating prototypes for coloration. Rather than casting him out, the Creator asked him to mend his ways and to help humans rid themselves of illness. In return, the False Face wished to be called Grandfather and receive offerings of tobacco and cornmeal mush (Fenton 1937; Speck 1949; Blau 1966; Rosenthal 1986). For this reason, tobacco and cornmeal are essential offerings to the masks.

A second myth that regulates mask style is that of the Great Doctor/Rim Being, the greatest of healers. He is a giant who is thought to live on the edge of the world and travels with the sun from east to west. When facing east in the morning, his face is red. At noon, when he stops to rub his turtleshell rattle against the Giant Elm to renew his powers, his face is half red, half black. In the afternoon, facing west, his face is black. Hence, masks carved at different times of the day may be assigned different colors. Tooker (1970) has noted that in modern rituals, the morning is dedicated to the living, whereas the afternoon is dedicated to the dead. Whether this distinction is related to the time of carving and coloration of masks is questionable. The Doctor also has control over the winds, which is consistent with Iroquois beliefs that loose mask hairs cause high winds (Fenton 1937).

A third myth that is pertinent to mask style is that of the Whirlwind being. This is a Cayuga, and sometimes Seneca, explanation for two-tone masks which hung on trees near houses to “split” the fury of storms. In this myth, a man walking in the forest heard a rattle and looked up to see a False Face. His nose began to bleed spontaneously, a symptom of False Face illness, and he died. Another man reported a similar occurrence to a medicine man and was ordered to conduct a healing with a two-tone mask, offering it tobacco. Later on, a woman dreamed that a storm was approaching, and that the two-tone mask must be hung in the trees to “split” its fury and spare the village.

Two-tone masks are also referred to as flying heads, or wind masks (Mathews 1978:110), having control over winds. Whistling shaped mouths, whether on two-tone masks or not, are reminiscent of this power. Similar stories of flying heads appear among the New York Onondaga. The Six Nations Onondaga refer to small disembodied heads which crawl around in the trees (Smith 1888:187; Hendry 1964:365; Rosenthal 1981–1982).

There are a number of Iroquois stories about the warlike and cannibalistic Stone Giants, whose skins are made of stone and flint. These stories are significant because stone and flint are sometimes implanted in mask faces (Beauchamp 1892:228), and because the origin of carving of face masks by humans is tied to the Stone Giants. One story tells how a lost hunter fell asleep in a cave similar to ones in which the Creator had killed all of the Stone Giants save one. The hunter dreamed of this last Giant, who taught him to survive in the forest and carve masks and rattles. Upon awakening, the hunter found himself at the base of a tree with a mask roughed out in it (Parker 1923:394–400).

In the less common myth of the Powerful Child, a chief's daughter was set adrift on the Niagara River as a sacrifice to a disease-causing spirit. She survived the falls, and after living under the cataract with a group of little people, eventually returned home. Shortly after her return, she gave birth to a son who carved a number of different small False Face images, explaining them as "my people, who live under the falls." He also had great powers and passed on his healing abilities to those to whom he made presents of the carvings (Speck 1949). The faces he carved had features that are carved today on full-sized masks and miniature maskettes, such as smiles, crooked faces, and different coloration.

Dreams

Although a discussion of the influence of dreams is beyond the scope of this chapter, it must be emphasized how important the dream complex is in Iroquois life. According to the Jesuits, (Thwaites, 1896–1901, Vol. 10:169):

They have a faith in dreams which surpasses all belief. . . . They look upon their dreams as ordinances and irrevocable decrees, the execution of which it is not permitted . . . to delay . . . the dream is the oracle that all these poor Peoples consult and listen to, the Prophet which predicts to them future events, the Cassandra which warns them of misfortunes that threaten them, the usual Physician in their sicknesses . . . the most absolute Master they have.

The Iroquois identified three points of origin for illness: natural injuries, witchcraft (object intrusion), and the patient's mind (Wallace 1958:238). Should the soul be frustrated in its desires, it could destroy the individual and, ultimately, the community. Violent dreams of two kinds are distinguished: those about members within versus outside the group. "Dreams in which hostility was directed at members of other nations were properly satisfied by acting them out in pantomime and in real life; but bad dreams about members of the same community were acted out only in some symbolic form, which had a prophylactic effect" (Wallace 1958:240).

Dreams are classic cathartic adaptive strategies for the handling of stress. The satisfaction of wishes as expressed through dreams may serve the same purpose as human mimicking of False Face behavior: it may allow the gratification of otherwise inappropriate wishes (Wallace 1959:7). The entire dream complex, which Wallace sees as therapeutic, has been formalized into a Dream Guessing ritual (*Hodinowhya*, Onondaga) (Blau 1963, personal communication), often translated as "asking or begging feast" (*konowhyahah*, or, *hoonowhyah*, Onondaga), or "turning the brain upside down" (*ononwharoria*, Huron) (Beauchamp 1891:41–42; Wallace 1959:72). These Dream Guessing rites are often enacted with the aid of False Faces. During certain calendric ceremonies, the False Faces beg cornmeal mush and tobacco from the audience as an extension of Dream Guessing through elaborate pantomime.

The relationship of mask style to dreams is complex. Not all mask traits and trait combinations that appear in dreams are dream-specific. Traits from a variety of sources can creep into the dreamer's

unconscious and then appear in his or her dreams. Many of the traits that appear in dreams are cultural prototypes. However, some mask details can be said to be dream-specific. A dreamer may create a variant of a prototype by changing its details consciously or unconsciously. The addition of teeth, ears, and earrings, a change in the number of wrinkles, and a shift in mouth slant, are examples. This process is indicated in the transmittal of information to the carver through such questions as, "can the mouth be a little more crooked?" It is essential to recognize that if a particular mask appears in a dream, it is critical that the mask be carved as seen.

Action of the Curers

Some False Face masks mimic the curative actions of medicine men. This includes not only the blowing used by maskers, but perhaps also sucking, which is used by shamans in other non-Iroquoian societies to remove a disease-causing spirit/object from the patient's body. Numerous mouth styles portray puckered lips. They are frequently referred to as blowing/whistling mouths.

Portrayal of the Victim and Disease Representation

Many masks show symptoms of False Face sickness (Fenton 1956:352; Rosenthal 1986:57). Nosebleeds are common representations. Facial paralysis, perhaps from strokes, appears to be mimicked by crooked faces. Inflamed eyes or the extraordinary piercing vision of the False Faces may be represented by large, shining, riveting eyes. Tremors and hysteria are expressed in the accompanying dance, rather than on the masks. In addition, the original mythological False Faces are all hunchbacks—an affliction of the upper torso and the position assumed by masked dancers.

Besides these traditional diseases, the European-introduced diseases such as smallpox and measles are portrayed. Masks showing these are spotted, and have less stylized, more realistic features.

Social Factors

Several social factors influence mask design, some of which are related to religious ones. These are (1) contact and acculturation, including Euroamerican influences and the effects of the Handsome Lake revitalization movement; and (2) the Seneca Arts Project. The Handsome Lake developments, though religious in nature, could only have arisen as an adaptive social response to intensive contact. Many of the Seneca Arts Project models (see below) were derived from the Handsome Lake movement or other factors.

Contact and Acculturation

Northern Iroquoians have had extensive contact with Europeans since the 1500s, both directly or indirectly (Cartier 1924; Trigger 1978:344; Tooker 1964). The introduction of Christianity by the Jesuits began a pattern of factioning that ultimately contributed to the downfall of Iroquois independence. Splits over alliances and losses of persons, villages, and crops in the Beaver Wars, the French and Indian War, and the American Revolution had severe effects (Hunt 1940; Graymont 1972; Weaver 1972:11; Tooker 1978: 434). Factioning was again aggravated by the 1784 to 1785 resettlement of 1600 Iroquois along a tract of land on the Grand River in Ontario (Weaver 1972:12). The introduction of European diseases such as measles, smallpox, and dysentery complicated matters (Wallace 1969:194–195).

With the defeat of the Iroquois in the American Revolution, the reservation period was initiated. Fraudulent land sales, political factionalism, illness, the demise of the traditional hunting-warfare-diplomacy male complex, and Quaker pressure for men to adopt white farming techniques, which the Iroquois considered female work, all led to cultural depression. Drunkenness, witchcraft accusations,

unemployment, fighting, increased marital brittleness, gambling, bribery, and overcrowding became commonplace (Wallace 1969:149–236).

These circumstances affected mask styles in several ways. First, as mentioned above, European diseases were added to the repertoire of those portrayed. Second, as conditions worsened during the 18th century and the Iroquois found that traditional medicinal spirits were ineffective in curing, some masks were carved with more grotesquely complex features, such as deeper wrinkling, using more exaggerated carving techniques (Wallace 1956; Martin 1978; Krech 1981; Hamell, personal communication). An alternative explanation for these carvings is that better carving tools, such as farrier's knives, became available at that time, allowing for greater flexibility.

A third way in which contact was reflected in the False Faces is the depiction of non-Indian ethnic groups. These include blacks, who were portrayed especially at the Onondaga reservation; Asians, who were depicted among the Seneca; and whites, who were represented especially at the Cattaraugus reservation. These ethnic groups were marked primarily by different coloration, hair material, and eye shapes. Later in the mid-20th century, characters such as Mickey Mouse, Hitler, and Popeye found their way into masking, but as a separate class of masks with somewhat different functions.

A final way in which contact affected the style of masks was through the Handsome Lake revitalization movement. In a classic revitalization movement, Ganeodiyo, or Handsome Lake, arose as a prophet in 1799 and initiated a syncretistic movement to stabilize Iroquois culture (Wallace 1969). Handsome Lake's dreams and visions were accepted with great seriousness, partially out of a need for stability, but primarily out of a deeper cultural pattern for "receiving the impetus for religious and cultural change from divinely inspired prophets" (Wallace 1978:447); recall the care given by Iroquois to fulfilling dreams.

Commonly, some cultural practices are rejected in syncretistic movements. Ironically, in the case of the Handsome Lake movement, it was the medicine societies and the dream rites that were most strongly rejected (Wallace 1959:74; 1969:69, 72, 252). These traditional cathartic mechanisms, which functioned as rites of reversal and rebellion, were replaced by the prophet's preference for disciplinary control tactics, which bore a strong resemblance to Judeo-Christian commandments. While Handsome Lake never overtly banned the masking society, he preached against them (Tooker, personal communication; Wallace 1969:252). Eventually he reached a compromise, allowing the maskers to practice on only one day of the major ceremonial days when their behavior could be closely monitored. However, the societies continued to practice in secrecy.

This change in the social context of production and use of False Faces may have had two primary effects on their stylistic variability. First, some carvers probably discontinued carving, changing the stylistic repertoires in their communities (see Braun, Chapter 5, on cultural selection). Second, by placing False Faces in a largely private domain with more limited communication between carvers, the potential for stylistic discontinuity was augmented and the opportunity for stylistic drift also arose. It is difficult to test this hypothesis because the sample of masks which come from this time period is small and probably biased.

The Seneca Arts Project

The Seneca Arts Project was a WPA project designed in 1935 by Arthur C. Parker to revive lost or dying Iroquois arts and to keep Indians employed during the Depression. It was sponsored by the Rochester Municipal Museum (now the Rochester Museum and Science Center) and funded by the Temporary Emergency Relief Administration and the WPA (Hauptmann 1981:140). Over the six years that the project operated, nearly 100 artists—primarily from Tonawanda and, to a lesser extent, from Cattaraugus, produced approximately 5,000 artifacts.

Parker, himself a Seneca, noticed that the Iroquois sense of identity was eroding rapidly due to factors that include extensive acculturation, the Depression, the loss of traditional artforms, an adoption of Hollywood-type Plains traits, and the demands of the tourist trade which led to the

production of large numbers of low quality “Indian kitsch” artifacts (Hauptmann 1981:138–142). Also contributing to this loss of identity was the 1911 fire in the New York State Museum, which destroyed the bulk of Lewis Henry Morgan’s large collection of Iroquois material culture. Thus, Parker’s motivations were to provide the Seneca with a renewed sense of identity, cohesion, and national pride.

The Seneca Arts Project led to a change in mask variability in three primary ways. First, it moved mask carving from the sacred to the secular domain (see below). Masks were now looked on as an artform out of context from their religious significance. They were carved in museums, rather than strictly for curative functions. Fenton (personal communication) notes that the carvers were fully aware of their actions and that this was not the first time that commercialization had affected carving. Market production had been active since 1906. As a result of the Seneca Arts Project, a new class of less traditional masks evolved, separate from those used for curing. Many were more flamboyant and pushed out the boundaries of tradition. Gloss paint, more elaborate carving techniques, and smoother finishes became common. Also, cartoon and political figures began to appear. Graburn (1976:15) has noted that commercialization frequently leads to such secularization. According to Hauptmann (1981:146), “the Seneca Arts Project materials that remain today . . . exhibit the unique qualities of individual participants, many of whom are considered the foremost artists of the twentieth century.”

Second, the project encouraged a process similar to the “founders effect” in biological selectionist theory (see Braun, Chapter 5). In particular, many of the artifacts were produced on a few prototypes and variation in the domain of more traditional mask forms was reduced. The Jesse Cornplanter prototype was especially emulated. Many of this type were red, had spoonmouths, and had distinctive wrinkling around large round eyes.

Thus, two parallel traditions of masks developed. The restricted range of more traditional masks served as the set of popular models for future, primarily curative masks. The less traditional, more flamboyant ones became the base for commercial production. Roe, (Chapter 2) has discussed this process of development of dual, segregated traditions in relation to his concept of “realms of protected deviation.”

Third, the Seneca Arts Project involved new carving tools and materials. Precision Swiss-made tools, which facilitated better and faster carving, were introduced. Also, the masks were carved from precut pine blocks, rather than from living trees. Consequently, masks tended to have finer surfaces and lines, and often became more complex. They also seemed to approach greater size standardization.

Psychological Factors: Creativity, Filters, and Patron–Client Interactions

Stylistic variation and change is often seen as the product of an interaction between internal creativity and external cultural and technological constraints (Roe, Chapter 2). However, the creative process is a more complex continuum, in which external constraints are partially internalized prior to production and internal motivation adjusts external constraints. This “negotiation” process (Voss and Young, Chapter 3) being subjective, is often difficult to see in the working of a single artist. In the case of Iroquois mask carving, however, where the person who dreams or conceives of the ideas is not necessarily the same one who executes them in wood, this process is seen more clearly. I have modeled it using the concept of filters through which the original inspiration is altered and stylistic variability is generated.

It appears that a sequence of filters operates between the patron requiring the mask and the carver (Figure 10-1) (Rosenthal 1985; 1986:66–72). A primary set of filters operates while the patron is dreaming, and between that time and his or her conscious recollection of the dream the following morning. The patron has been subjected to a number of external sources of inspiration—museums, rituals, and books where masks have been seen. These serve as filters for the expression of experience during the course of dreaming and remembering the dream.

The other filters exist during the transmission of the message to the carver. What the patron

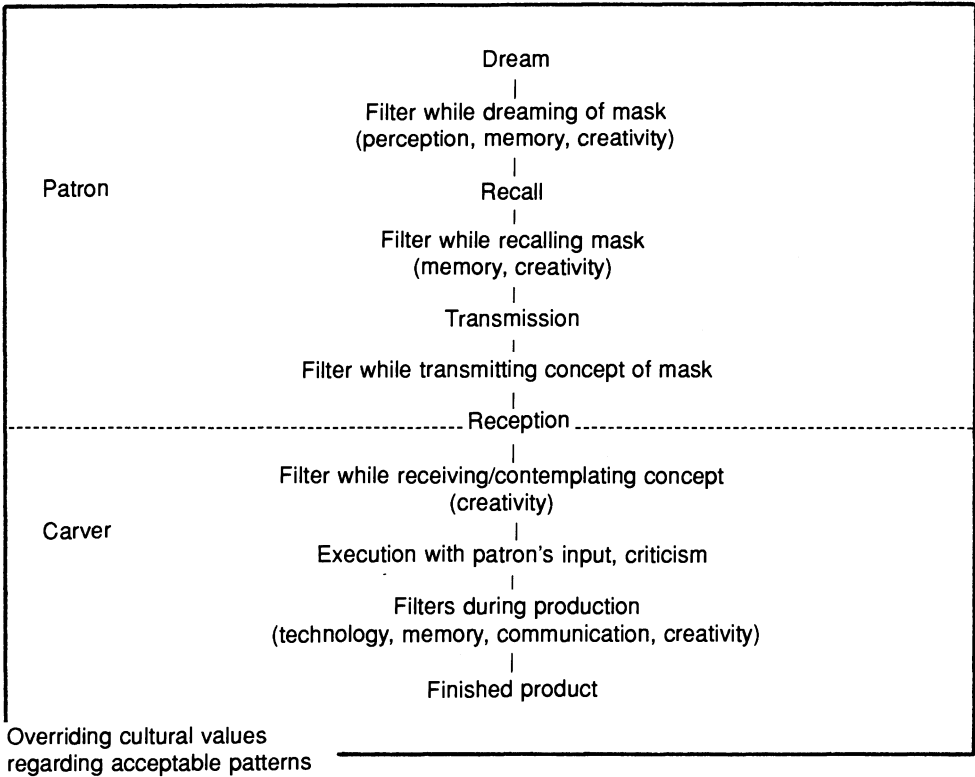


Figure 10-1. Filtering processes that affect style.

selectively remembers at this time, what the patron wishes to convey, and artistic license all are involved.

How a message is received by the carver involves the most critical level of filtering. Problems of translation and reception appear, much as in the children's game of "telephone" (Rosenthal 1985, 1986). In interviews with patrons who have commissioned masks, it appears that an overwhelming pattern exists where the patron is asked what type of mask he or she would like. After a response, either the patron or the carver may draw a prototype or consult a mask similar to the one that is desired. (Bunzel [1929:57, 59] also mentions the use of photographs, often from anthropological sources, as an influence of Pueblo pottery designs.) There is a level of negotiation between patrons and carvers. Often, the two will discuss what alterations are to be made to the prototype in order to make it more closely resemble the dreamed mask: "Can the mouth twist the other way?" or "Can you add teeth?" Again, the carver may not receive exactly the patron's message.

Psychological experiments on the perception and remembrance of colors by individuals sheds light on both the patron's filtering of his or her dream and the patron's and carver's filters during the transmission phase. Ervin (1964) cites experiments where individuals were handed identical colored chips from a large selection of colored chips. Later, many individuals were unable to identify the same chip out of the sample. Individuals also identified chips corresponding to their own concept of a color, which varied between subjects.

Just as color concepts shift within and between individuals, so can definitions and perceptions of

what constitutes a crooked mouth style, albeit within certain stylistic boundaries. This may account for the large numbers of aberrant styles that I identified (Rosenthal 1986). Mouth styles were by far the most variable, with limitless variants on a single theme (Figure 10-2). Variants are so close to each other stylistically, that it is sometimes difficult to determine which prototype they were originally intended to be. For example, some straight mouths were tilted slightly, making it difficult to tell whether or not they were intended to be straight or slightly crooked variants. Even informant input was split on original intentions. Roe (Chapter 2) has discussed the use of “topographic mapping” methods for resolving prototypes and their variants in such circumstances.

This problem of recalling perceptions and the different perceptions of different individuals is recognized by the patrons and carvers themselves. One often hears interactions like, “Let me show you what I want,” or “Show me what you want.” In the carving of ritual masks, this is extremely important for an appropriate relationship to the supernatural, successful interpretation of dreams, and the solution of problems.

Such perceptual shifts continue throughout the actual production of the mask and are complicated by artistic license and creativity. Carvers make frequent statements indicating that they are nothing more than the means by which the end is carried out: “I’m just a pair of hands.” However,

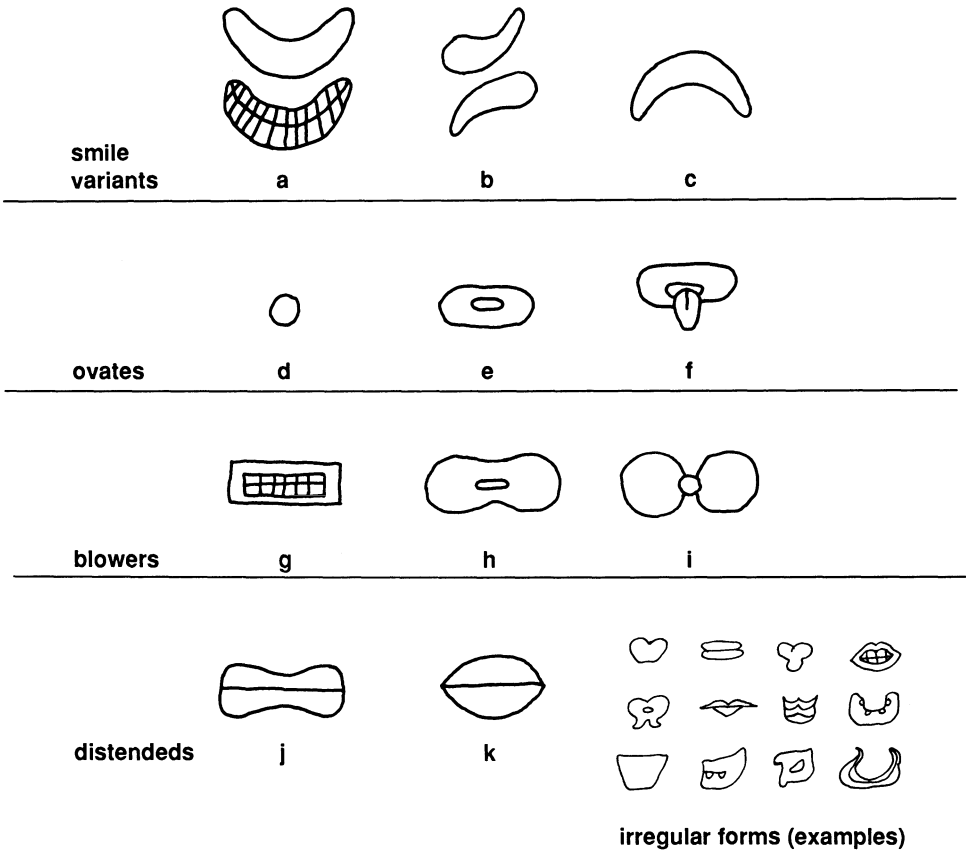


Figure 10-2. Mouth style variations (after Fenton 1956): (a) smiling; (b) crooked; (c) hanging; (d) whistling; (e) oval distended; (f) protruding tongue; (g) square blower; (h) bifunnelate blower; (i) spoonmouth blower; (j) modified distended, variant of spoonmouth; (k) straight distended.

the carver is subjected to the influences just discussed, as well as creativity, conscious or unconscious (Bunzell 1929; Barnett 1953; Rosenthal 1986). Roe (Chapter 2) has discussed this phenomenon of "deflection from self" for small-scale societies in general.

Thus, there are numerous opportunities in the sequence for stylistic alteration: (1) how the dreamed mask is remembered; (2) how it is described; (3) how it is received; (4) how the dreamed mask is executed; (5) the overall influence of a culturally recognized and defined set of aesthetic alternatives; and (6) the influence of individual artistic creativity and license.

The interaction between the patron and the carver is important in the development of stylistic shifts. Despite the fact that the modifications that arise during consultation seem slight, they build up a significant repertoire of preferences. These influence not only carver and patron, but also future carvers, all of whom see the masks in action. Carvers produce a stylistic change, patrons see the altered form, may discuss it with another carver, who in turn alters subsequent pieces. This cyclical interaction between individuals and their society has been noted by Bidney (1970), Schutz (1971) and Toelken (1979). As Barnett (1953:9) has said, "All innovations have antecedents. All are therefore derived from others . . . [i]nnovations, whether major or minor, whether of private or public significance, and whether of ephemeral or lasting utility, are consequently being made." Masks which might illustrate this phenomenon most clearly are the non-Indian ethnic masks mentioned earlier. Selectionist theory (Braun, Chapter 5) likewise stresses the importance of historicity in style change, but sees factors beyond the interaction of individuals and individual preferences and choice as necessary for directional, transgenerational stylistic change.

CONTEXT AND THE MULTIPLE FACTORS THAT AFFECT STYLE

Like others in this book (especially Roe, Chapter 2; Carr, Chapter 7; Pryor and Carr, Chapter 8), I have shown that the style of material culture is influenced by many factors. It is not determined simply by social and personal identity, upon which archaeologists have tended to focus. Given the many possible ways to interpret stylistic variability in the archaeological record, how is a relevant interpretation to be found?

There are several ways, which Carr (Chapter 7) discusses in greater detail. First, one can narrow the range of possible interpretations to some degree by considering the relationship between the potential meanings of design attributes and their position in a design attribute hierarchy. Second, when working with symbolic rather than isochrestic style, one can note the cultural context(s) in which the material items operate and consider the communication priority that various kinds of messages are likely to be given in that domain. By context is meant such domains as the sacred, the profane, the liminal, male, female, gender contrasting, high status, low status, or status contrasting. By kinds of messages is meant categories such as personal identity, social identity, cooperation, complementarity, competition, rejection, and emulation (Wiessner 1984). This approach is primarily deductive. Third, and complementing the second, one can inductively examine how the formal, geographic distributional, and temporal distributional aspects of stylistic traits change as cultural context varies. These data, along with the particulars of the context and the order of importance of messages that they suggest, can be used to develop possible interpretations of stylistic variation. Finally, the third strategy can be extended in its application from single to multiple artifact classes. Examining the interrelationships among styles of different classes as context varies can be more insightful than examining the formal and distributional properties of a single class as context varies (e.g., Roe, Chapter 2; Neitzel, Chapter 12; Morris, Chapter 13).

To illustrate the feasibility of the second and third strategies, I will focus on one dimension of contextual variation, the distinction between sacred and profane contexts. I will show how it structures message priorities and how it influences the relationship between design attribute form and meaning.

The Sacred and Profane

The sacred and the profane were defined by Durkheim. He notes their distinct separation and the visibility of this separation: "The opposition of these two classes manifests itself outwardly with a visible sign by which we can easily recognize this very special classification" (Durkheim 1965:55).

Given this, one might reasonably expect, first, that artifacts used in sacred versus profane contexts would often be distinguished in their styles. Second, one might expect that in either of these contexts, there is a priority of messages to be communicated stylistically. Also, the priority should differ between sacred and profane contexts. Finally, assuming an efficiency of communication, the more important factors for expression in each context should be reflected in more visible stylistic attributes (Carr, Chapter 7; Carr and Rosenthal 1985).

In particular, and following Durkheim, in sacred contexts, social messages would be expected to be emphasized over ones pertinent to the individual artist or client. Religious beliefs, mythological themes, and psychological phenomena (e.g., dreams, visions) of social importance would also be expected to be emphasized. One would expect these to be expressed in the most visible design attributes. The emphasis upon social and socioreligious messages in sacred contexts is expectable because the sacred domain is typically developed, altered, or broken down in relation to social and socioreligious factors. Other factors, such as political, economic, or individual ones, might also be expressed, but with less importance and visibility. In contrast, in profane contexts, any of a broad variety of factors, including individual expression, might be given priority and be communicated stylistically in the most visible aspects of style. The particular factors would depend on the specific circumstance (Carr, Chapter 7, Table 7-2).¹

The importance and visible expression of social and socially pertinent phenomena relative to the individual in sacred contexts is illustrated in the previous section on creativity and filters. The process by which a mask comes into being often first involves reference to a prototype that is socially, religiously, or mythologically important. The major, most distinguishing features may be sketched by the patron. Subsequently, the prototype is altered to reflect the particulars of a patron's dream. These alterations are often, though not always, at a less visible level (e.g., the number of wrinkles, the presence of teeth, ears, earrings) in line with the unified theory of style presented by Carr in Chapter 7. Thus, in the creative sequence, and to some extent with respect to the visibility of style attributes, priority is given to the socioreligiously relevant. A more specific test of this relationship is not possible because poorly visible mask traits—the nuances of style that often reflect the individual—were not studied.

The relationships between context, message, and style are most apparent in my False Face data and other stylistic data sets when objects shift context from the profane to the sacred or vice versa. Initially, such shifts may seem surprising, for the sacred and profane domains are defined as polar opposites and superficially would not be expected to intersect. However, intersection can occur, and in ways that affect message priority and visibility. I call the process by which objects move from profane to sacred contexts and meanings *veneration*, and from sacred to profane contexts and meanings *degeneration*.

¹EDITOR'S NOTE: The association between the sacred domain and social messages, and its distinction from the association of the profane domain and a broader range of messages including expression of the individual, must be qualified with Malinowski's (1948:237–254) contrast between beliefs that are "social dogma" versus those that are "individual speculation." Sacred contexts are situations that pertain to any numinous experiences and beliefs, either those that are socially recognized, have social consensus, and/or are socially constructed—social dogma—or those that are unique to the individual. Thus, sacred contexts do not associate exclusively with the social determinants of style and social messages. Pryor and Carr (Chapter 8) provide an example where a sacred context (the dreams of healer-basketmakers) acts as a "realm of protected deviation" (Roe, Chapter 2) and allows individual expression. However, more commonly in non-Western societies, individual expression is subordinated to expression of society and social dogma in sacred contexts.

Veneration

Durkheim notes that the sacred and profane cannot enter into relationships with each other “unless the profane is to lose its specific characteristics and become sacred after a fashion” (Durkheim 1965:55). Evidence from the Iroquois and numerous other societies indicates that veneration occurs with some frequency. While conducting fieldwork at the Six Nations Reserve near Brantford, Ontario, I was told that some masks were initially felt to be stylistically outside traditional boundaries, but that they were used with enough frequency and seen by enough people to make them traditional. The Onondaga have developed a variety of parody masks, which depict such characters as Mickey Mouse, Hitler, Popeye, and Charlie Chaplin. Although these masks were originally intended as jokes, they have become so much a part of the Onondaga repertoire that their use has been institutionalized into a separate parody ritual, or Acculturation Rite (Blau 1966:569–570). Thus, what was once nontraditional and possibly profane is now traditional and sacred. Additionally, within a stylistic continuum, there has been a change in the messages conveyed by these masks, from initially idiosyncratic jokes to an expression of the social costs of acculturation.

Degeneration in Commercialization

The process of degeneration is exemplified among the Iroquois by shifts in mask style and meaning that have occurred with their commercialization as “tourist art” and with their production during the Seneca Arts Project. Both cases involve greater self-expression of the artist in highly visible ways and less constraint by traditional, socially oriented boundaries.

Commercialization is the production of objects which may or may not adhere to accepted formal standards and which are produced for the world market (Graburn 1976:5–8). In commercial or “airport art,” the artist shows freer reign, sometimes pushing traditional boundaries beyond recognition. Thus, among the Iroquois, greater variability in mask styles occurs generally among less traditional communities. For example, Mohawk traditional masks are relatively scarce, perhaps reflecting that the Mohawk were acculturated earlier or more thoroughly than other Iroquois.

My research revealed three different classes of Iroquois masks which vary in how traditional they are: (1) conservative masks produced for ritual use; (2) those produced for museums and serious collectors, which also tend to be traditional; and (3) commercial art. The latter is inferior in quality, highly innovative beyond tradition, and might be called “Ethnokitsch” (Graburn 1976:5–8; Rosenthal 1986:66). Some examples of ways in which creativity is shown in commercial art are differences in coloration such as yellow, gray, pink, and multicolor imitation of clown faces; mouth styles that are extreme variants of traditional themes; the presence of foreign attributes such as eyeglasses cut from metal; and the shape and size of mask, some being so enormous that they could never be worn, while others being so narrow they do not cover the wearer’s face.

Some changes in mask style during commercialization relate to the availability of new materials and tools, which ease production cost. This is often the case with tourist art (Atamian 1966:1340; Graburn 1976:10–11). For example, as soon as the Iroquois acquired European trade goods such as beads, cloth, and precision tools, they were incorporated in production and the stylistic repertoire. There are numerous examples of False Faces made with aluminum can bottoms, plastic disks, and other Western manufactured materials. These appear with greater frequency on commercial masks and at the less traditional reservations.

Degeneration and artistic license often involve the crossing of media lines (Roe, Chapter 2). This is a mechanism that facilitates a change in message content and priority. An Iroquoian case in point is the nontraditional wooden Longnose mask. Traditionally, Longnose masks were manufactured of cloth or deerskin in a constrained style. The cloth or deerskin covered the head, had eyeholes cut for the wearer, and had an attached length of the same material for the nose. They were used as an agent of social control to ensure that children behaved. However, one recent museum example, made by a

prominent traditional carver, showed strong evidence of artistic license. It was made of wood, rather than cloth or skin, and appeared to be a False Face with an enormous phallic nose. Similar examples of the crossing of media lines by certain styles and concomitant freeing of artistic expression have been documented by Bascom (1969) and Boas (1955 [1927]). Both note the appearance of painted kachinas on pottery and of Navajo sand paintings translated into rug patterns. Such crossing of media lines may be a direct response to acculturation in that traditional motifs become more important as identity markers, irrespective of their original contexts of use, meanings, or messages.

Degeneration via commercialization also involves the structural simplification of a style and/or the use of inferior materials for construction (Roe, Chapter 2). Atamian (1966) notes this in his study of Anaktuvuk Inuit masks, which were never ritual objects but have become commercialized for the Euroamerican/Eurocanadian market. An Anaktuvuk respondent indicated that simplification made no difference because "the White man does not know the difference anyhow" (Atamian 1966:1341). Similarly, Iroquois masks for commercial sale show structural and material simplification. For example, some commercial masks have backs that have not been hollowed, giving the appearance of wall plaques. Some use cheap glues, thumbtacks, and fake fur.

In times when the domains, messages, and styles of artifacts are changing, the sacred and profane and the artifacts used in them may be thought of as separate cultural categories by the artist, even though they are not always distinguished in form. Graburn (1976:15) points out that "though apparently identical objects are made for both ritual purposes and for sale, the artists may keep them separate in their heads; the Santeros of Cordova, New Mexico make wooden santos for religious worship, and make the same or similar items for sale but call the latter monos, 'mere dolls, models'." One Iroquois respondent showed me a mask that for all purposes looked as though it were traditional. When asked what the changes were that took it out of the sacred context, he was unwilling or unable to tell me. His statement was marked by a smile and a headshake (Rosenthal 1986:66). In some societies, the differences can be as simple as not conducting the "lifegiving" prayers and invocations. Among certain Iroquois, a mask is seen as alive, traditional, and powerful regardless of whether or not invocations have been made.

Degeneration in Acculturation

Commercialization is not the only form of degeneration. Objects in the sacred domain may be translated into the profane as part of internal change or acculturation. The Hopi Mickey Mouse kachina is an example (Carpenter 1973). Commercial kachinas can be more "cartoonlike" in characterization, brighter in color, and may in some cases represent creatures that do not exist in the traditional pantheon of spirits.

For the Iroquois, the Seneca Arts Project exemplifies degeneration within acculturation. The project was meant to revive lost or dying arts. As noted above, this revival of mask carving involved secularization. Although masks were originally carved as sacred paraphernalia using traditional sacred masks as prototypes, and with traditional carvers teaching younger carvers, the masks came to be seen as an artform in the profane context. As in commercialization, artistic license and new materials and tools resulted in stylistic changes.

In sum, Iroquois masks differ in the messages that they carry and in their style according to whether they are used in sacred or profane contexts. In different domains, different kinds of information are given priority and expression. In particular, the presence of the individual and artistic license are felt to a lesser degree than social and socioreligious factors in sacred contexts and in highly visible traits. In profane spheres, such as the Western market, the individual artist may express himself more strongly.

This generalization should not be misinterpreted to suggest that artistic creativity is totally removed from sacred contexts or is always found in profane ones. As Biebuyck (1969:6) notes, "Society can impose upon its artists a certain objective subject matter and style but the artist himself

has his own personal conception of the subject matter, a particular feeling for the style, and a certain technique in executing the form." Ritual masks and religious paintings are sacred objects, but a Willie Seaweed Northwest Coast mask can be distinguished from one produced by Tony Hunt just as a Michelangelo can be distinguished from a Da Vinci. It is a matter of the relative *degree* of appearance of the individual and the *level of visibility* of the traits that reflect him or her. Wingert (1962:15–16, Bascom (1969:99–111), and Gerbrands (1969:62) have also commented on the power of individual creativity.

TIME SCALES OF STYLISTIC CHANGE

The factors that determine style and stylistic change, which I have discussed, differ in the scales of time over which they operate—from short- to long-term. Defining the time-scale of a factor can be difficult, because the time-scale depends on the context. Also, both short- and long-term factors can operate simultaneously, but within different sets of contexts. Finally, the same process can have both short and long-term effects. The situation is more complex than that defined by Braun (Chapter 5), who artificially segregates short-term and long-term transgenerational processes.

Long-term change occurs gradually, and usually is internally driven. It occurs within the context of cultural stability. Traditional boundaries are adhered to fairly closely and are altered at a conservative rate. For Iroquois False Face masks, long-term change is produced by creativity during the dreaming, envisioning, and production of an item within the constraints posed by religious/sacred mythology and traditional psychological filters. Roe (Chapter 2) has discussed other relevant constraints that operate during production.

Short-term change is more rapid and usually is triggered by external influences and cultural instability. The disruption that occurs under contact, acculturation, revitalization movements, and the influences of Great Individuals are examples. Commercialization is an extreme form which illustrates how short-term change is instituted and proceeds. Contexts are rapidly altered, allowing for the relaxation of traditional constraints and the proliferation of innovations. For example, during the 18th century, traditional Iroquois ethnomedical practices and coping mechanisms were unable to respond effectively to European diseases. This contextual change affected the style of maskettes (Hamell, personal communication). Carvers began making somewhat less traditional maskettes, with almost derivative features expressing the anger of the Iroquois with the spirits for their perceived failure. However, masks still remained largely within traditional boundaries for fear of retribution. Cherokee Booger masks (Speck 1950; Rosenthal 1986) arose in a related vein as portrayals of Euroamericans who the Cherokee hold responsible for the social evils which have befallen them. During the 1920s through 1940s, representations of political and cartoon figures became popular, such as the Katzenjammer kids, Mickey Mouse, Popeye, and Hitler. These exemplify how the Great Individual or Prominent Character can affect or intrude upon a culture rapidly.

An example of a single context that had characteristics conducive to both long and short-term change is the Seneca Arts Project. The masks produced by it are traditional by definition, and the project was designed to revive interest in dying arts and traditions. Fenton (Hauptmann 1981) and several senior carvers made concerted efforts to visit museums and find photographs of old masks to serve as prototypes. Thus armed, they returned to the reservation communities to reintroduce young Iroquois to carving, the sacred mythology, and mask styles that were traditional over the long term. However, because carving was done outside its traditional framework, in a different context, there was room for short-term innovation, despite a heavy reliance on copying prototypes.

Veneration can also bridge contexts and time-scales. At first, an innovation may appear to be a short-term change. However, as we have seen, over a period of time and through use, a mask may become sacred by virtue of its contextual use and may shift in style only gradually thereafter. The clearest example of this is the rise of the Onondaga Parody ritual described earlier. In contrast, degeneration appears to operate almost exclusively within the realm of short-term change.

Such patterns of stylistic change have been noted previously in the anthropological literature (Barnett 1953; Kroeber 1963; Atamian 1966; Biebuyck 1969; Graburn 1976; Martin 1978; Cordry 1980). The importance of context, contextual change, the simultaneous multiplicity of contexts and their influences, and the dualistic effects of some contexts cannot be underestimated when analyzing style.

CONCLUSIONS

Archaeologists work with fragmentary remains of groups that often no longer exist. What we see is only a portion of the culture. We do not see the nuances of daily cultural interaction or its psychological dynamics. Nor is it easy to wrest from archaeological data the plurality of meanings that comprise cultural phenomena and the effects of changing contexts.

This does not mean, however, that these issues can be ignored, or that they pose a hopeless situation. Archaeologists would gain greater insight into stylistic variation and the cultural past if they would focus on analyzing multiple rather than single classes of artifacts and hunt for multiclass stylistic indications of the larger *fabric* of cultural life within several contexts (Hodder 1982; Toelken 1979:156–157; Roe, Chapter 2). Archaeologists must recognize what ethnographers and folklorists see regularly:

Folk ideas and expressions have a way of appearing in several genres. . . . One result is that we may find the same idea or motif here in a tale, there in a legend, here is a ballad, there in a news item . . . we cannot let generic boundaries become ideational restrictions, especially when we seek to understand the live processes behind the descriptive categories of folk structures. The choices open to a traditional performer at any time will be encouraged by the traditional context of the event. [Toelken 1979:152–153]

Keil (1979) also notes the tendency to ignore context and echoes this concern in his ethnomusicological analysis of Tiv song and dance. In attempting to elucidate the issue of social stratification, he examined a variety of genres besides song, including designs on calabashes and walking sticks and in scarification. He also considers multiple contexts that vary in gender and social cohesion.

Other useful perspectives that archaeologists can take in style analysis are relevant to the problem of defining ethnic groups and the use of material culture as ethnic markers. First, it is essential to remember that stylistic variation is attributable to more than differences in ethnic and personal identity, upon which archaeologists have recently come to focus (e.g., Wiessner 1983). The many determining factors that I have illustrated in this paper make this clear. Working with multiple artifact classes and exploring their varying relationships in different contexts can help to reveal these factors.

Second, it is important to remember that social groups are not isolated from each other, and that material culture flows across social boundaries. Herbich and Dietler (1989) have noted serious problems with using the information exchange and boundary maintenance models in their research on the Luo of Kenya. There, even groups that are hostile to each other use each other's material culture; they also intermarry. Thus, Toelken questions the usefulness of *ethnic identity markers* or symbols in the group recognition process. Instead, he focusses on *cues*, a distinction also made by Royce (1982:148–149). Cues are those constant features of the individual over which he or she has little control. These revolve around the physical body (including skin color, hair, body shape, and such), and are used by others as a reliable means of categorization. Cues are of two kinds: those operating within groups and those between groups. Less visible differences are recognized only by the in-group, and are invisible to outsiders, reminiscent of Wobst's (1977) discussion of the visibility of style attributes.

In contrast to cues are ethnic identity markers, symbols, or what Royce calls *clues*. These are less reliable, manipulated patterns that are used to establish a particular identity (see also Voss and Young,

Chapter 3). Language, dialect, nonverbal behavior, in-group knowledge, and material style are examples (Royce 1982:211–212). These ethnic markers are fluid, varying with context—what Royce calls situational ethnicity. “Tradition” implies rigidity, whereas ethnic markers, including “style,” implies choice.

From this perspective, context is critical in the establishment of identity. For example, Toelken warns that although foodways are used as an indicator of culture, they are only clues; we must remember that “not everyone who eats chow yuk is Chinese; not everyone who eats matzoh-ball soup is Jewish; not everyone who eats teriyaki chicken is Japanese” (Toelken 1979:73). Thus, stylistic variation and change cannot be explained solely in terms of Weissner’s (1983) emblematic and assertive identity processes, Sackett’s (1982) isochrestic functionalism, or Hodder’s (1982) contextual particularism.

In sum, Barth, Toelken, Royce, Herbich and Dieter, and other ethnographers have much to offer archaeological perspectives on material culture. The ethnographic data presented here indicate that it is imperative to recognize that multiple factors affect style as part of a complex system which is extraordinarily culture-bound and which is more easily known when multiple contexts and multiple artifact classes are considered.

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Chapter 11

Approaches to Style

Complements and Contrasts

STEPHEN PLOG

The topic of style has received increasing amounts of attention in the last few decades, a trend that is appropriate given the importance of style and stylistic analysis in archaeology. Typology and seriation, exchange studies, and efforts to characterize prehistoric social organization are just some of the central issues that normally require a focus on style. Despite the increasing concern with style, it could be argued that we are not much closer to agreement on basic questions than we were in the early 1960s. The sources of stylistic variation are still being debated (Wiessner 1984, 1985; Sackett 1985), as are the methods that should be used to measure or classify that variation (Jernigan 1986) or to increase our understanding of it (Hodder 1986).

On the one hand, it could be regarded as surprising that our efforts to explain or even describe that variation have not progressed any more than they have. Conversely, one could argue that given the complexity of both the archaeological record and the human behavior that produces stylistic variation, the slow progress toward an understanding of stylistic variation is only to be expected. Recent research in particular, including the chapters in this book, would seem to support the latter point of view. We are experiencing a very healthy debate over a variety of issues that reflects both increasing analytical sophistication and a growing awareness of the multifaceted nature of style as a cultural phenomenon. And issues that once were only considered indirectly are now being confronted head on. These developments are indications of strength in the discipline.

Yet our realization of the complexity of style has both fortunate and unfortunate aspects. Given its central importance to so many aspects of archaeological research, a better understanding of style should improve our overall ability to describe and explain prehistoric culture change. That same complexity, however, necessitates expending considerably more time and money in conducting the fieldwork and analysis necessary to achieve those goals. In this chapter, I will consider both aspects: first examining information requirements and issues in analysis and then illustrating how collecting some of the relevant data can change and improve our understanding of prehistory.

COMPONENTS OF STYLE

Early ceramic sociology research initiated the recent period of emphasis on stylistic analysis. These studies generally measured either levels of stylistic similarity (e.g., Longacre 1970, Tuggle 1970; Engelbrecht 1974) or degrees of homogeneity (e.g., Leone 1968; Whallon 1968) to achieve their goal of inferring residence groups or measuring interaction intensities. Only when both were measured as part of the same study (Whallon 1969) was it discovered that the pattern of covariation between similarity levels and degrees of homogeneity did not meet expectations. It had been predicted that with increasing interaction between groups, within-group homogeneity would decrease while between-group similarity would increase. Instead, it was discovered that homogeneity actually increased with increasing similarity (Figure 11-1). These results, along with a variety of new ethnographic and archaeological studies (e.g., Graves 1981; Hantman and S. Plog 1982; Hodder 1982; Wiessner 1984), have led to the conclusion that we must collect additional types of information to understand all aspects of the stylistic variation that we observe in the archaeological record.

This argument is highlighted by aspects of recent debates about the nature of style. Earlier studies tended to view style as a "unitary phenomenon" (Graves 1981:311) caused by one primary factor, whether social interaction as proposed by the ceramic sociologists or information exchange as suggested by others (Wobst 1977). In contrast, recent studies (e.g., Hodder 1982; S. Plog 1983, 1990a; Hill 1985; Wiessner 1985) stress the multivariate nature of the relationship between style and human behavior. Wiessner (1985) and Sackett (1985), for example, recently have distinguished several types of stylistic variation. Elsewhere (S. Plog 1990a), I have referred to those types of variation as isochrestic (see also Sackett 1985), symbolic (or "stylistic" in Wiessner's terms), and iconographic (or "emblemic" following Wiessner).

Isochrestic variation has been discussed in depth by Sackett (1985). It results from behavior that is "acquired by rote learning" and is used automatically or unconsciously. Many of the proposals of the ceramic sociologists viewed style in this manner (Hill 1985). In contrast, symbolic variation is more actively used to convey social or personal identities (Wiessner 1985:160–161). This aspect of style resembles Wobst's concept of style as information exchange. Finally, iconographic variation is a specific case of symbolic variation in which stylistic statements conform to certain spoken ones, containing clear, purposeful messages aimed at a specific target population (Wiessner 1985:161). The "great art styles" of pre-Columbian civilizations often have been viewed in these terms. These iconographic styles seem to have a singular, predictable relationship between a referential form and its message or meaning in contrast to symbolic styles in which the relationship between form and meaning is unclear or multivocal. The latter styles also are employed by social groups or divisions of widely varying size and character, while iconographic styles (as they have been traditionally defined) seem to be associated with larger sociopolitical units.

Although these categories imply discrete types of behavior, they are perhaps better viewed as different segments or extremes of several dimensions of cultural behavior. The categories contrast behavior that is unconscious and habitual behavior that is conscious and purposive. They contrast multivocal and univocal symbols. They contrast symbols used by social units of different scales. Although we must recognize that continuous variation occurs between these extremes, the extremes nevertheless serve as useful models for generating expected patterns of stylistic variation.

IDENTIFYING THE COMPONENTS

There are precedents for studying each of the various aspects of style defined by Wiessner and Sackett. What is significant about Wiessner's framework, however, is the argument that each aspect may account for different components of stylistic variation on material from a given area. Rather than being mutually exclusive explanations, they are complementary. They may explain patterns of stylistic

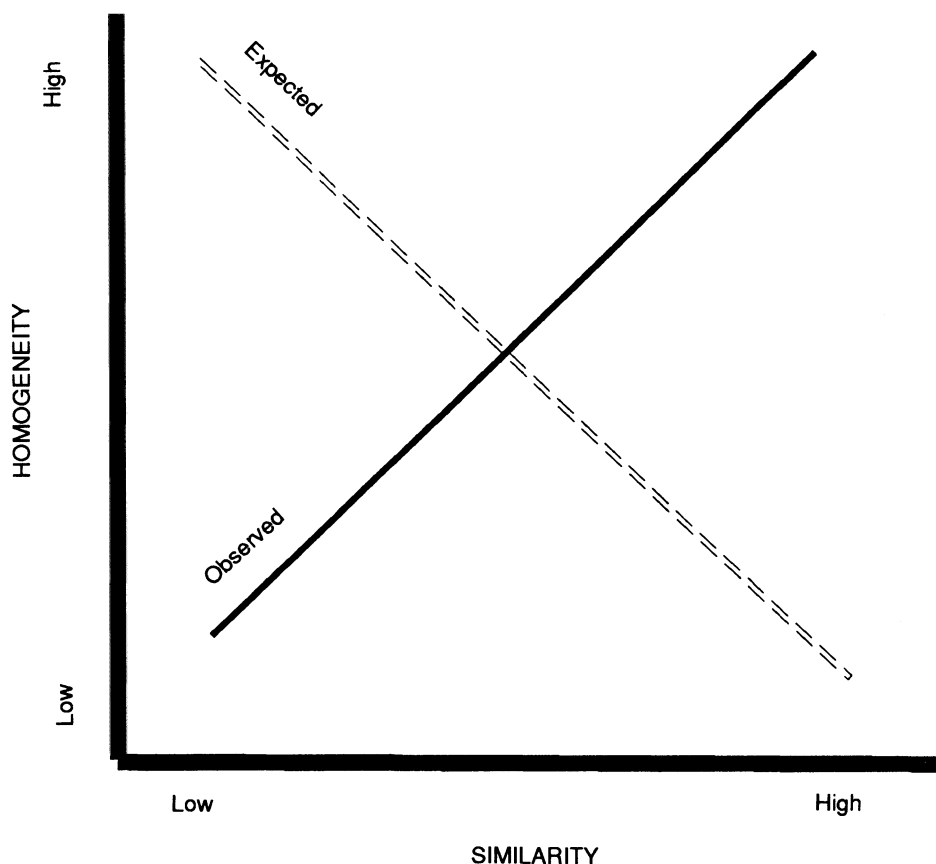


Figure 11.1. Relationship between intersite stylistic similarity and intrasite stylistic variation expected by the ceramic sociologists compared to observed patterns.

variation on different materials, patterns at different time periods, or perhaps even different parts or attributes of the stylistic variation on the same material.

An equally noteworthy aspect of Wiessner's framework is the explicit discussion of criteria for distinguishing isochrestic, symbolic, and isochrestic variation. Based on her presentation, as well as the work of Wobst (1977), Graves (1981), and others, several criteria can be suggested. These include the rates of change, regional spatial distributions, strength of attribute associations, and local context.

Rates of Change

Wiessner (1985:163) suggests that "isochrestic procedures should . . . remain relatively stable except in the face of internal or imposed technological change" and "will not necessarily be altered by shifting patterns of social interaction." In contrast, symbolic aspects of style "should be an updated, current, and dynamic commentary on social relations, and in many cases the processes of differentiation and emulation will cause 'fashion swings'" (Wiessner 1985:162), perhaps because of the more dynamic nature of smaller social groups. As a result, stylistic variation produced by symbolic behavior can be less stable, changing at a more rapid rate over time.

Graves (1981:373) has suggested that symbolic elements should not change rapidly because "changes that would modify or rearrange symbolic elements or other aspects of design would presumably be selected against." Whether these expectations are contradictory may depend upon the time-frames involved, an issue that neither Graves nor Wiessner discusses explicitly. Graves may be referring to stable social relationships of the type that an ethnographer would observe during a short period of fieldwork, whereas Wiessner is discussing more long-term, though dynamic, social patterns likely to influence the archaeological record. Alternatively, Graves and Wiessner may be discussing different types of cultural contexts with the stability of those contexts varying both spatially and temporally. The issue of stylistic change as an historical process is one that in general has received too little attention in models based on ethnoarchaeological studies, and must be addressed more explicitly. Merging information from ethnoarchaeological studies that are rich in contextual data but lack temporal depth with complementary archaeological research characterized by the opposite strengths and weaknesses is critical to further development of theories of style.

A relevant contingent factor in explaining rates of stylistic change is population growth. Although rapid style change may be associated with dynamic social patterns, it is also possible that isochrestic variation may change more rapidly in association with population growth. In his ethnoarchaeological study of a Kalinga village, Graves (1981:287) found that "of all the factors affecting design variation . . . , birth cohort was most consistently and regularly expressed." Graves (1981:288) suggests that this could be a significant factor in stylistic drift particularly in contexts where new settlements are established by small groups of people as population rises (see also Binford 1963:121). Thus, "birth cohort design differences could arise simply as a result of random sampling events between cohort individuals. This . . . is expressed temporally through the process of cohort replacement in which direction design changes occur as the result of stochastic processes (Dunnell 1978) operating on a fairly small population of potters." Thus, rapid stylistic change could reflect situations where there is significant population growth and "large scale population and birth cohort turnover or alteration" (Graves 1981:288; cf. Shanks and Tilley 1987:139). Even in stable demographic situations, sampling error during the establishment of daughter communities may result in stylistic drift (Binford 1963:92). Distinguishing drift from rapid change in active symbols thus will require examination of more than simply rates of stylistic change.

Regional Spatial Distributions

Several people (Hodder and Orton 1976:195–196; S. Plog 1976, 1978; Wobst 1977) have suggested that isochrestic aspects of style may have clinal distributions when frequencies are examined across space. In contrast, the distribution of symbolic and iconographic aspects of style may deviate strongly from distance decay patterns. Such deviations would occur whether the behavior is directed outside the group (1) to enhance boundary maintenance (Wobst 1977), or (2) to symbolize alliances (Graves 1982; Hantman 1983); or directed within the group (3) to reinforce social identity or cohesion (Graves 1981), behaviors that are not mutually exclusive. In the first and third cases, we should find higher than expected frequencies of the stylistic characteristic within zones and lower than expected frequencies when boundaries are crossed. In situations where style symbolizes external alliances, irregular and discontinuous distributions of characteristics may result. These distributions are most probable when such alliances are risk reduction strategies that will most likely develop between environmentally distinct areas (Hantman 1983).

Note that the above discussion focuses on frequencies of individual characteristics that have been shown to covary strongly. This contrasts with the more typical discussions of similarity or homogeneity measures that often lump multiple characteristics indiscriminately. Recognition of the multi-dimensional nature of style implies that the latter approach may obscure rather than clarify the nature of stylistic variation. Exceptions to these statements would be sets of attributes that covary in a patterned manner, an issue that will now be addressed.

Strength of Attribute Associations

One of the basic assumptions of 20th-century archaeology is that we can discover artifact types—groups of similar artifacts defined by a strong pattern of association among their attributes (Spaulding 1953). Although dissenting points of view have been expressed (e.g., Ford 1954), and the polythetic nature of types has been discussed (e.g., Clarke 1968), most research either attempts to define types or assumes that types defined by consistent associations are present.

One of the most interesting aspects of Wiessner's separation of style into various components is her related arguments concerning expected patterns of attribute association. She proposes (1985:162–163) that “artifacts resulting from isochrestic choices would vary around one standard mean type, with range of variation depending on functional requirements, materials, standards set by society, etc.” In contrast, because of the more dynamic, multivocal nature of symbolic style, we would expect the various characteristics of those styles to be less likely to exhibit consistent patterns of attribute association. If those aspects of symbolic behavior, however, change from messages of social identity or group membership to more iconographic messages, we might expect such styles to exhibit the redundancy that is a necessary component of languages (e.g., Wollheim 1968:52). That redundancy would result in patterns of association between basic attributes similar to those normally expected for artifact types (S. Plog 1990a).

Given these arguments, we should be able to define clearcut artifact types only when the stylistic variation is largely a component of isochrestic or iconographic behavior. When, however, aspects of style are symbolic behavior as defined above, such types should not be expected, particularly when variation over a period of time is considered as is the case in most archaeological studies. In addition, if these symbolic aspects of style vary in frequency from society to society, we might expect well-defined artifact types to be present or more common in some areas and periods, and absent or less common in others. Similarly, some materials (e.g., cloth, pottery) might exhibit types while others do not.

Local Context

More than any other group, it has been the symbolic–structural (or postprocessual) archaeologists who have recently emphasized the importance of examining the context of style (e.g., Hodder 1986). There are, however, clear precedents, ranging from Taylor (1948) to Binford (1962; 1965:206), for discussions of the importance of artifact production and use. A concern for context requires attention not only to local spatial distributions but also to the extent to which patterns of stylistic variation crosscut different material categories. Unfortunately, it is the latter type of information that is often lacking from many analyses of archaeological materials.

This absence may perhaps be explained by a lack of concern on the part of archaeologists, but also is a product of both preservation problems and the differing manufacturing processes that are required to produce different types of artifacts (S. Plog 1983:137–138). The latter problem in particular makes it difficult to compare patterns of stylistic variation among different kinds of artifacts. For these same reasons, attention to context is much easier to illustrate using ethnographic materials. Not surprisingly, it is those data to which the postprocessualists usually turn when they emphasize the importance of examining context. Even where comparisons are possible, such as among the designs found on ceramic vessels, textiles (e.g., Kent 1983), and wooden ritual artifacts (e.g., Vivian, Gwinn, Dodgen, and Hartmann 1978) in the northern sections of the American Southwest, they rarely have been made.

Summary

The above discussion highlights the importance of collecting a variety of information in conjunction with studies of style. When these types of information are combined with other basic

controls that are needed for stylistic analysis, such as adequate temporal control and separation of nonlocal from locally produced materials (S. Plog 1980a), the task we face in understanding prehistoric stylistic variation is formidable. I am not suggesting that we collect every relevant piece of information in each situation; one cannot defer conclusions until "all the facts are in." We must, however, collect the information that is most pertinent given the questions being asked.

ANALYTICAL ISSUES

The need for additional information in style analyses is not limited to the types of variables discussed above. The ways in which stylistic variation is described or analyzed also must be expanded. If style cannot be regarded as a unitary phenomenon from an explanatory perspective, then it also cannot be viewed as a unitary phenomenon from a classificatory perspective. That is, we cannot assume that there is only one informative dimension of stylistic variation. At issue here is the manner in which style is described and analyzed.

Several alternative methods of classification have been proposed during the last decade. Unfortunately, some discussions of those approaches imply that there is only one relevant aspect of design variation. Washburn (1977, 1978, 1984, Chapter 4), for example, has advocated symmetry analysis, emphasizing the objectivity of the approach in contrast to many existing typological frameworks. The latter frameworks, as well as many other approaches to classifying stylistic variation, are often not well defined, leading to serious interanalyst measurement differences (e.g., Tuggle 1970:72; Fish 1978; Swarthout and Dulaney 1978; Washburn 1984).

Washburn also focuses on the presumed close relationship of design structure to participation in a particular culture: "One aspect unique to each culture is a peculiar structuring of its parts. Indeed, these organizational rules are so fundamental that they will be manifest in all subsystems: economics, social organization, and even in [ceramic] designs" (Washburn 1984:126–127). Alternatively, Jernigan (1986:9; see also 1982) has argued for the analysis of stylistic "schemata": "a configuration or pattern of configurations for which we have evidence that the configuration or pattern was conceived as a distinct unit by the makers of the style." Although the approaches advocated by Washburn and Jernigan differ in some of their specifics, both direct attention to aspects of stylistic variation that have tended to be neglected in many archaeological studies.

At the same time, however, I suggest that these approaches have serious weaknesses if they are regarded as the *only* worthwhile approaches to analyzing style. If we accept the multidimensional and processual nature of style, we also must recognize that different aspects of stylistic variation may be components of different types of behavior, whether isochrestic, symbolic, or iconographic. Analyses that focus on only one aspect of stylistic variation therefore are likely to miss a wealth of information while spuriously grouping aspects of that variation that are independent. We therefore need to measure more aspects of stylistic variation, not fewer. In addition to this general issue, both Washburn and Jernigan raise more specific questions regarding approaches to classifying style. In the sections below, I will briefly examine some of the more important concerns.

The Nature of the Questions and the Data

Consistent with the theoretical view that more aspects of stylistic variation need to be measured is the position that stylistic analysis requires an attribute-based classification method that recognizes multiple stylistic characteristics that can be examined in a hierarchical framework, as originally proposed by Rouse (1939) and Rowe (1959) and later used commonly (e.g., Johnson 1973; Redman 1977, 1978; S. Plog 1980a; Hantman and S. Plog 1982; S. Plog and Hantman 1986). There also are more practical reasons for using this method, including two that I would emphasize based on my own research experience. These are: (1) the nature of the research questions and (2) the nature of the

evidence that is often studied—large collections of sherds from ceramic vessels. I find it critical in research that addresses demographic change, exchange patterns, and regional social relationships to consider as large a sample of individual settlements as possible. Analysis cannot be restricted to the settlements likely to yield the collections of whole vessels needed to consistently employ the methods advocated by Washburn or Jernigan. Not only are those settlements few in number but, as many have noted in discussing early biases in excavation strategies, the sites with large samples of vessels are also very likely to represent only a small, and perhaps unique, portion of the behavioral variation present in the region. Restricting stylistic analysis to such sites is thus likely to yield a distorted view of the variation that existed in a region. Similarly, grouping samples from smaller sites that individually yield only a few vessels may confuse any behavioral variation that existed at those sites and mix samples from different temporal periods given the rapid rates of stylistic change that are likely under some circumstances.

A multiple attribute approach that recognizes several different stylistic characteristics, however, can be applied with little difficulty to collections of sherds, allowing hundreds of sites within even a small region to be included in the analysis (e.g., Hegmon 1986; S. Plog and Hantman 1986). Although all attributes may not be measurable on every sherd, information on some of the attributes can usually be extracted from each sample, thus maximizing the amount of information obtained.

Perhaps most important, this approach also allows us to study independently several dimensions of stylistic variation that potentially may be important. One can avoid mixing and comparing unequal phenomena (S. Plog 1980a:44). Also, one is not forced to modify continually, or make exceptions to, an approach in order to recognize dimensions of variation that were not originally part of the classification method, as Jernigan does. In short, the approach I have advocated is more open-ended and more flexible and can be employed to study a larger number of settlements and ceramic collections. I nevertheless would emphasize that structural characteristics, including symmetry patterns, are among the attributes that should be considered when possible.

Unfortunately, there is only a weak theoretical or empirical basis for predicting the types of attributes that are likely to be integrated with particular components of stylistic variation. Voss (1980) has postulated differences between interval and nominal scale attributes and several others (Wobst 1977; Graves 1981; Carr 1985; Carr and Rosenthal 1986) have focused on differences in design visibility. Although dissimilar patterns of variation have been demonstrated for attributes that differ in these characteristics, no generalizations about the relationship of specific types of attributes to particular types of behavior appear to be supported by the minimal amount of empirical data currently available (e.g., S. Plog 1983:129–131), and some would argue that such generalizations are unlikely given the complexity of stylistic behavior. Final selections of attributes thus are dictated more often by what *can* be measured given the fragments of designs present on sherds.

Clearly, however, the subject of attribute choice is a domain where important issues remain unresolved. Here a more interdisciplinary focus on style might prove profitable. For example, examination of the sizable literature on variation in human perception and cognition might prove to be one fruitful way of addressing such questions. A greater consideration of context also is likely to clarify relationships between types of attributes and types of behaviors (Carr, Chapters 6, 7; Pryor and Carr, Chapter 8; Rosenthal, Chapter 10), and the contexts we consider should be expanded to include those discussed in other disciplines such as art history. Issues regarding styles and visual symbols are not restricted to anthropology.

Explicit Definitions

One of the concepts emphasized in some discussions of classification systems is their “objectivity.” Although I have used the terms “subjective” and “objective” in discussing classification systems, I would now suggest those terms are inappropriate. As Hodder (1986:39–40) has argued, there are subjective aspects of all archaeological analyses, including symmetry classifications. Arbitrary deci-

sions must be made and conventions must be established before the approach can be used consistently by different people. Thus, the key issue is, instead, the extent to which the procedures are explicitly and clearly defined in order that a particular study is replicable (S. Plog 1980a). I see both symmetry analysis or multiple, attribute-based methods as significant steps in that direction, though improvements are still needed.

In contrast, the analysis of “schemata,” recently proposed by Jernigan, represents an inexplicit approach and deserves a brief discussion for that reason. Nowhere are the methods of identifying schemata defined in such a manner that other analysts can use them consistently. We are simply told to look “at how design configurations are used in a corpus of designs done in a single style,” particularly design “repetition in a patterned way on a single vessel” (1986:9). These types of patterned repetition or schemata are defined as “a complex unit of design consisting of a configuration or patterns of configurations that retains its distinct identity across a number of vessels and or design contexts in a particular style repertory” (p. 10). The critical phrase “distinct identity” is never defined. In addition, how one identifies a “single style” or a “particular style repertory”—a key first step in the analysis—is never addressed, a significant problem given the considerable variation among archaeologists in how they identify styles.

Jernigan himself shows the difficulty in applying the approach as he is forced either to modify his schemata to recognize variation that he somehow feels is important, but which does not fit his definition, or to equate designs that he recognizes are different (pp. 14–15). The latter decisions are explained by suggesting that “variation of detail . . . is permissible in this style,” but how he reached that important conclusion is not discussed (p. 15). Given the many ambiguous components of the classification method, it is unlikely that different analysts could identify schemata in a consistent, replicable manner (see Douglass and Lindauer [1988] for further discussion of Jernigan’s approach).

Meaning: Emic versus Etic Approaches

Much of the recent discussion of stylistic variation has focussed on some aspect of its meaning. In some cases, emphasis has been on examining more specific contextual relationships than has been the norm and, as a result, possibly discovering more specific associations with particular social segments (e.g., women, adolescent males, religious activities). In its most simple form, this is an elaboration of earlier proposals regarding the importance of the social context of production and use. The continued collection of this detailed information can only improve our understanding of stylistic variation and increase the reliability of social inferences.

In other cases, the emphasis on meaning has been directed toward discovering the particular units of style that are recognized by society. Many of these efforts are problematical for two reasons. First, they ignore the unconscious aspects of the selection of stylistic alternatives, assuming that unconscious (e.g., isochrestic) variation is either irrelevant or uninteresting. Such variation, however, may be related to particular types of behaviors that always have been of interest to archaeologists and therefore may allow us to infer important kinds of information. Second, many efforts to discover the meaning of particular units of style assume that the culturally recognized, “emic” units of style can be discovered with little difficulty. Such assertions ignore the long debate among archaeologists about the “reality” of types, a debate that indicates the uncertainty of efforts to delineate culturally recognized units. Perhaps even more significant are the multiple or changing meanings that can be associated with particular symbols.

Moreover, some of the specific methods suggested to discover such units seem questionable at best. Jernigan (1986:9) argues that emic units of decoration on painted pottery from the American Southwest can be defined by analyzing how the design configurations are used or arranged. This assumes that a particular type of arrangement, as we define it, is equivalent to cultural recognition and thus ignores the possibility of cultural variation in how arrangement or placement is perceived.

Jernigan (1986:10), for example, schematically illustrates the design patterns on three different vessels, as follows:

Design Patterns						
Vessel 1	A	A	A	A	A	A
Vessel 2	AB	AB	AB	AB	AB	AB
Vessel 3	ABC	ABC	ABC	ABC	ABC	ABC

and states that the patterns on vessels 1 and 2 demonstrate that the pattern on vessel 3 (repeated occurrences of ABC) is composed of three distinct schemata (A, B, and C) or culturally recognized design units. The three vessel patterns are certainly consistent with the hypothesis that design unit A could be used independently of B and C, and that A and B together could be used independently of C. But without additional evidence we cannot conclude, as Jernigan has, that such a pattern indicates that the makers of the style conceived of A, B, C as distinct units. Perhaps more important given Jernigan's criticisms of hierarchical approaches that measure multiple characteristics of style, his examples fail to demonstrate that units of design smaller or larger than his schemata could not have been culturally recognized.

The linguistic analogies that Jernigan uses (1986:9) would suggest that this is a definite possibility (e.g., letters, words, and sentences in our own language system are each recognized). Cognitive anthropologists are aware that their "schemata" are organized in the hierarchical manner that Jernigan attempts to criticize: "Schemata are not only organized into complex hierarchical structures, they are also interlinked with other schemata to form still larger structures" (Casson 1983:437). To suppress such variation and argue that there is only one meaningful cultural unit of analysis would hinder any efforts to understand either languages or stylistic variation.

Finally, it is not even clear that A, B, and C should be considered comparable, equivalent units of design. Based on the study of Friedrich (1970), for example, it could be argued that if the patterns of association shown above were supported by a larger sample of vessels, then the units may belong to different levels of design variation, with B and C being secondary units sometimes added to embellish the primary decorative unit, A.

In short, how we perceive a design to be used is a culturally determined decision—determined by our culture, not the culture of the makers. Jernigan (1986:9) confuses this distinction and I also must plead guilty as an accessory to the crime. In earlier discussions of design hierarchies, I have suggested that the different levels of a hierarchy may represent different decisions made by the prehistoric artisan (S. Plog 1980a:42). I would still argue that the different levels or variation are not equivalent, and therefore should be analyzed separately. However, despite qualifying statements that the "decisions" could have been conscious or unconscious (S. Plog 1980a:41), the word "decision" implies a conscious recognition and is inappropriate. A logical (to us) division of style into multiple levels of variation is not necessarily equivalent to defining culturally recognized units of design or choice processes.

I am not suggesting that it is impossible to identify the cultural meaning of prehistoric styles. Such discoveries, however, (1) require a greater variety of evidence than is available for most kinds of stylistic variation analyzed by archaeologists, (2) often assume exact parallels between prehistoric and historic societies that are known from ethnohistoric records or ethnographic research, and (3) may not be necessary to answer some research questions. Moreover, the history of archaeological research has shown that the variation that we ourselves identify can be valuable and informative about the evolution of prehistoric societies. But to exploit fully that information we must focus on multiple causes and multiple characteristics of variation. This point will now be illustrated by discussing the relationship between stylistic variation and our understanding of culture change in one specific region, the northern section of the American Southwest.

A CASE STUDY

As noted above, all of the different aspects of style that could be and should be measured to aid our interpretations of variation have rarely, if ever, been examined in a single region or archaeological study. Nevertheless, analysis of some aspect of style is a common component of many research projects, whether for dating purposes or for social inference, so that a considerable amount of information has accumulated in many areas.

The northern section of the American Southwest is no exception to this statement; studies of the development of Pueblo cultures in northern Arizona and New Mexico and in southern Utah and Colorado (Figure 11-2) often have focused on decorative variation on the ceramic fragments so common on sites in the region. Potters manufactured such vessels, most typically white or gray in color with black painted designs, from at least A.D. 700 until European contact in the 16th century. Throughout that period there was considerable variation in the types of designs, both temporally and spatially.

That variation initially was studied for two primary purposes: (1) to define pottery types that then could be used to date sites and (2) to define culture areas. The usually implicit assumption of such studies was that style was, in the terms I have used above, isochrestic variation. It thus was ideally suitable for delineating culture groups and, assuming that norms slowly changed or “drifted” over time, dating settlements within regions. Stylistic similarities, or a lack of similarity, between sections of the northern Southwest were explained by the intensity of communication between groups. Such interpretations assumed that such communication increased the probability of group styles diffusing.

Later studies of decorative patterns included some of the initial ceramic sociology studies of the 1960s and 1970s. Studies such as those of Hill (1970) and Longacre (1970), for example, attempted to define matrilineal residence groups within sites. Others (e.g., Leone 1968; Tuggle 1970) measured the degree of community endogamy or exogamy or intensities of interaction among villages. Although the goals of such studies differed somewhat from those described above, the basic assumption—style as isochrestic variation—was the same (see Hill 1985 for a more in depth discussion of the assumptions and similarities).

Only in the past decade have analyses of Southwestern design styles recognized the possibility of style as one component of symbolic behavior (e.g., Cordell and F. Plog 1979; S. Plog 1980a; Graves 1982; Braun and S. Plog 1982; Upham 1982; Hantman 1983). These interpretations have increased the possibility of insights into a variety of important social processes, but they are not without their weaknesses, particularly a paucity of intrasite contextual information, such as ceramic distributions among houses or burials. In addition, although some studies have begun to focus on different levels of design variation, these have not been considered across broad enough areas or long enough periods to identify consistent associations between particular components or levels of decorative patterns and types of stylistic behavior. Finally, most analyses still focus on statistical measures of similarity or homogeneity that are calculated using numerous stylistic attributes that, as argued above, may be associated with different types of stylistic behavior. Combining attributes in that manner will only hinder our understanding of cultural processes.

Nevertheless, some important discoveries have been made. First, there is significant variation through time in many parameters of stylistic behavior. That variation is inconsistent with the assumption of constant behavior in aspects of style (e.g., consistently strong associations among attributes that define types) that has been imposed by encompassing most ceramic studies within a typological framework. Second, there is at least a rough correlation between cultural complexity in the northern Southwest and the complexity of stylistic behavior. As cultural complexity increased, the variety of factors integrated with stylistic behavior also became increasingly complex. This can be illustrated by discussing the components of stylistic behavior noted above along with some of the associated trends in cultural change.

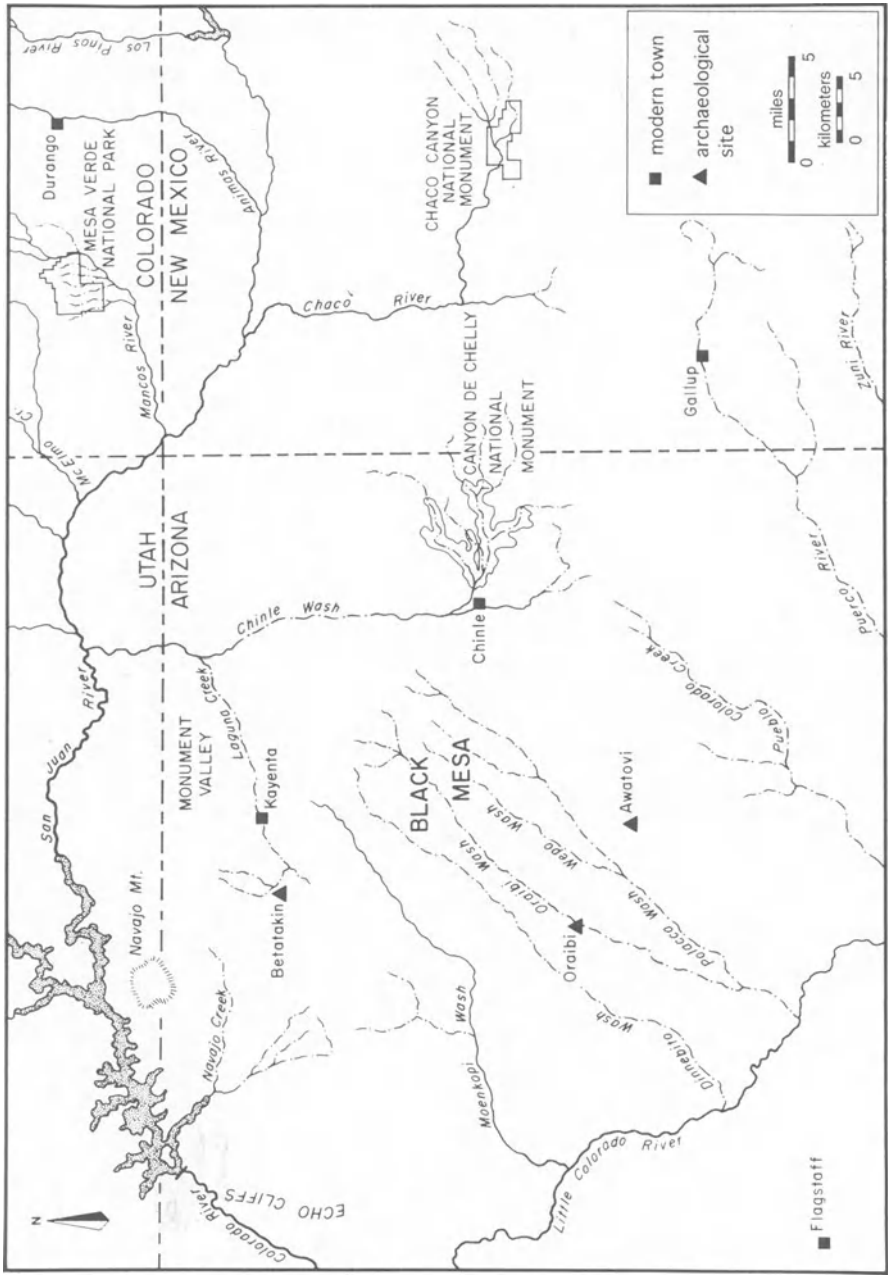


Figure 11.2. The northern section of the American Southwest.

Isochrestic Variation

Although the precise dates vary from one section of the northern Southwest to another, the period from approximately A.D. 700 to 950 roughly brackets a period characterized by the establishment through many parts of the Southwest of villages inhabited by groups which pursued a mixed agricultural, hunting, and gathering economic strategy. In general, the villages are small and were probably occupied by groups whose maximum size may have differed little from that which characterized earlier, mobile hunters and gatherers. Important changes did occur, however, in the nature of structures within permanent villages. Public ceremonial buildings (kivas) and storage areas associated with individual dwellings became increasingly common.

Flannery (1972) has noted comparable differences between what he calls villages and circular compounds in other areas of the world. These changes may be associated with, among others things, an evolution away from the sharing ideology which typifies hunters and gatherers and that leads to minimal storage and little material accumulation (Lee 1979). In its place may have developed a set of cultural beliefs more consistent with long-term storage by individual social units and with an increase in private processing implements and facilities that are often a necessary component of an agricultural adaptation (S. Plog 1990b).

Despite the increasing appearance of villages, however, population levels throughout much of the northern Southwest appear to have been extremely low. Estimates of actual densities are few in number, but one study of northern Black Mesa in northeastern Arizona has suggested that levels there did not exceed about 0.40 people per km² (S. Plog 1986a:289). Moreover, through much of this period, occupation of the region appears to have been patchy, with settlement concentrated more in the broader drainages at lower elevations (Glassow 1972; LeBlanc 1982:40). Only toward the end of the period does sparse occupation of higher elevations and narrower drainages appear to have increased. Finally, although groups probably resided at one primary settlement through much of the year, short-term mobility may have been considerable, perhaps leading to sporadic rather than continuous occupation of individual localities (S. Plog 1986b). Available evidence suggests occupation spans at many settlements of approximately 15 years (Ahlstrom 1985; Hantman 1983).

Stylistic variation between A.D. 700 and 950 can be characterized in several ways. First, the impression of most scholars (e.g., Kidder 1924:333; Colton 1939:59; Danson 1957:92) is that there was a relatively homogeneous distribution of decorative patterns through most of the northern Southwest, although this conclusion must still be supported by intensive analyses. Although local variation certainly existed, spatial distributions appear to have been clinal. Whether different types or levels of attributes have different distributions is not known, because analysis has largely focused on broad, all-encompassing decorative "styles." Second, there are strong patterns of association among different attributes. The ceramic types that have been defined for this period are among the most clearcut for any part of the prehistoric sequence (S. Plog 1990a). Third, rates of stylistic change were slow, with little variation throughout the period (S. Plog and Hantman 1986; S. Plog 1989).

Given the expectations outlined above, all of these characteristics are consistent with the conclusion that stylistic variation on ceramics manufactured between A.D. 700 to 950 was primarily isochrestic. Most decorative variation apparently was not an active symbol consciously selected to convey information, but was more a product of learning patterns and acculturation. Consistent with this interpretation is the demographic information summarized above. Low population densities suggest that regional social networks would have been relatively extensive with little likelihood of well-defined boundaries (see also S. Plog 1980b, 1986b; Hantman and S. Plog 1982)). The existence of symbolic variation among other low-density groups with extensive social networks (e.g., Wiessner 1977, 1985), however, suggests that either, (1) the prior Southwestern analytical focus on "styles" rather than individual attributes may have missed symbolic variation, or (2) symbolic variation was expressed on other materials that are less well preserved.

Symbolic Variation

After approximately A.D. 1030, several important processes appear to have characterized much of the northern Southwest. One of the most obvious was a significant increase in population density at both the local and regional levels. Primary habitation sites were established in an increasing variety of environmental zones and in previously occupied areas population densities may have increased by a factor of 20 or more over levels during the 9th century (S. Plog 1986a).

Several studies have suggested that these increases occurred despite the settlement of increasingly marginal agricultural zones (Braun and S. Plog 1982:514). For example, in the northern Black Mesa area there was increasing use of higher elevation zones as well as smaller drainage basins (S. Plog 1986c). These settlement trends likely produced higher risks of agricultural failure and higher year-to-year fluctuations in agricultural harvests (Braun and S. Plog 1982:514) for two reasons: (1) the inverse correlation between elevation and growing season that characterizes the region and (2) agricultural fields had to be watered in part by runoff (Matson and Lipe 1978:5), but the probability of adequate runoff decreases with the size of the catchment basin.

With higher risks of failure and fewer unused agricultural zones, changes in the organization of local regional social networks would be expected. In particular, more compact and integrated networks should have evolved as one mechanism for coping with and "averaging out" local variation in resource availability (Braun and S. Plog 1982:514). Simulation studies, for example, have suggested that formal social ties that required resources to be shared, but also limited the numbers of groups with which sharing was required, would have favored long-term group survival (Hegmon 1991). While most of these ties would have been within a given network, both Hantman (1983) and Madden (1984) have argued that ties that crosscut network boundaries also would have been necessary.

With these changes, there would have been an increasing range of social ties and affiliations to communicate and reinforce (actively or consciously) within and outside the group. Decorative patterns on ceramics would have been one likely communication mode. Again, the full range of studies that would be desirable to demonstrate this point has not been conducted, but the existing evidence is suggestive. First, many scholars have suggested that the distribution of many decorative characteristics became more localized, with regional stylistic traditions developing. In some cases, spatially discontinuous distributions of stylistic patterns have been noted, suggesting the possibility that styles symbolized interregional social ties (Hantman 1983). Second, there was increased variation in stylistic characteristics within localities (Hegmon 1986). Although this pattern is inconsistent with the expectations outlined by Braun and S. Plog (1982:515), Hegmon (1986:280) suggests that, if communication and integration were increasing within networks, stylistic variation also should have increased. Third, rates of stylistic change rose sharply (S. Plog and Hantman 1986) while the degree of association among different stylistic attributes dropped (S. Plog 1990a). Difficulties in defining and recognizing ceramic types from this period may be explained by these trends. More important, these trends are consistent with the patterns expected when some aspects of stylistic behavior are increasingly part of symbolic behavior (Wiessner 1985). Thus, as social systems in the northern Southwest evolved, stylistic behavior on ceramics changed in a corresponding manner, becoming more complex and multifaceted.

Iconographic Variation?

Although increasing population density and diversity in settlement location typified most of the northern Southwest during the 11th century, there was considerable variation within the region in other characteristics. In some localities, such as upland sections of northeastern Arizona, community size remained constant—population growth simply produced greater numbers of small villages. In other areas, however, processes of aggregation were initiated. The most extreme case was Chaco

Canyon in northwestern New Mexico where several large towns, each with hundreds of rooms, were constructed within a few kilometers of each other along Chaco Wash. Much of that construction occurred during a few short episodes of activity around the middle of the century. Similar activity, involving the construction of characteristic Chacoan structures, also characterized surrounding areas during the last half of the 1000s. Such similarities, along with large quantities of nonlocal resources in canyon sites and a system of roads connecting the canyon settlements with outlying communities, have led many to postulate the growth of a large regional network centered in the canyon (e.g., Toll 1985; LeBlanc 1986).

A salient decorative feature on pottery from Chacoan sites is the Dogoszhi style of design, characterized by rectilinear and curvilinear motifs "filled" by a series of hatched (parallel) lines. Although strongly associated with Chaco, the style is also found on pottery throughout much of the northern Southwest. Few have attempted to explain that distribution in terms other than simple interaction and diffusion. Recently, however, it has been suggested that the use of the style is associated with participation in some part of the Chacoan network (S. Plog 1990a; Toll 1985). Neitzel (1985, Chapter 12), for example, has found high relative frequencies of the decorative pattern on ceramics from both large towns and small villages, as well as at Chacoan outliers. Also, based on the positive correlation between evidence of ritual activity and exchange in the prehistoric Southwest (S. Plog 1986b, 1990a), I have examined the association between ceramics with Dogoszhi decoration and ceremonial structures in an area of small villages on northern Black Mesa, over 100 kilometers west of the canyon. During the period of maximum building activity in Chaco, hatched decoration in the Dogoszhi style was over twice as common on the village sites with ceremonial structures compared to nearby settlements that lacked such structures. Proportional (or relative) frequencies were used in these tests, so the difference between sites with and without ceremonial structures is not a function of differences in settlement size or in sample sizes. In contrast, other decorative characteristics (including earlier characteristics discussed above as well as those contemporaneous with the Dogoszhi style) were equally abundant on sites with and without the structures (S. Plog 1990a). In addition, the period in question was the first in which two distinct black-on-white decorative styles were used on ceramics found on Black Mesa sites. While some of that pottery was not made locally, both decorative styles appear on vessels produced within the local area (Deutchman 1980).

Although there are few other signs of direct links between the two regions (e.g., none of the Chacoan roads extend into the Arizona study area), there are strong correlations in patterns of population growth and decline as well as in the magnitude of exchange activity. These data, along with evidence for linking ritual activity and exchange, for an extensive exchange network centered in Chacoan Canyon, and for an association of characteristic Chacoan pottery with ritual activity in northern Arizona, suggest that there were at least some indirect links between the areas. More important for the analysis of decorative variation on Southwestern pottery, it appears that components of style became highly redundant and may have symbolized participation in that widespread economic and perhaps social network. It thus appears that by A.D. 1075–1100 in the northern Southwest, some components of decorative variation may have become iconographic. More detailed studies of the context of such pottery, as well as the content and structure of the designs, are certainly needed to evaluate that hypothesis. Contextual variation in earlier designs in particular has received less consideration. Even if the hypothesis is rejected, however, it is clear that characteristics of Dogoszhi style differ from those of both contemporary and subsequent design styles, and that variation must be explained, not ignored.

CONCLUSIONS

The above discussion should not be viewed as a proposal that we have now defined all of the major components of decorative variation in the northern Southwest. Quite to the contrary, I feel

we have just begun to exploit the range of information that can be extracted. To test proposals such as those advanced above and to further advance our understanding of stylistic variation, we need continued improvements in several areas. First, theoretical perspectives must be reexamined and developed in the manner of Wobst (1977), Graves (1981), and Wiessner (1985). The last decade has been a particularly fruitful one in regard to such issues and the persistence of this trend can be seen in this volume. Second, there must be changes in our methods of characterizing stylistic variation. In particular, research should focus on a variety of stylistic parameters. Efforts to restrict attention to only one or two characteristics alleged to be of primary importance should be resisted. Third, we need more information on patterns of variation and covariation in the archaeological record—information on rates of change, spatial patterns, local contexts, and degrees of attribute association. Studies of a wider range of materials distributed over broader geographic areas are also needed.

To achieve these goals, some of the traditional “restrictions” on research will need to be removed. Common assumptions (e.g., high degrees of covariation among attributes) will need to be discarded and tested with new evidence, for example. Studies of individual research areas will need to be combined with the analysis of materials collected by multiple institutions. Although such efforts will be both expensive and time consuming, the importance of stylistic variation in archaeological inference should convince us to make such research a major goal.

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Part IV

Style in Complex Societies

Most stylistic research in archaeology, including the chapters in Part III, focus on egalitarian societies and the alternative attribute states of single artifact classes. The chapters in Part IV attempt to broaden stylistic studies by considering processes within complex societies—chiefdoms and states—and the alternative artifact classes within multiclass material systems. The efforts to build middle-range theory begun in Part III are continued here.

Complex societies present interpretive issues and require analytical strategies for studying material style that are different from egalitarian societies. In egalitarian societies, most individuals are broadly similar in their social prestige and share similar ranges of identities and roles (Johnson and Earle 1987). Interactions occur among roughly equivalent social units. Consequently, the kinds of messages that tend to be emphasized stylistically commonly refer to the society as a whole (Moore 1983).

In contrast, complex societies contain a diversity of social groups that may vary in power, prestige, economic standing, ethnicity, and religious affiliation (Johnson and Earle 1987). Many of these groups are organized hierarchically (Flannery 1972; Johnson 1977). Thus, material style in a complex society can reflect and facilitate a great variety of social processes, including differentiating social groups or levels within them, legitimizing the existence of social groups and their internal hierarchies, and integrating diverse groups to form the society as a whole.

In the realization of these processes, a diversity of messages may be conveyed stylistically (Bailey 1964; Cohen 1969; Fraser 1972; Fraser and Cole 1972; Rabineau 1975; Vincent 1978; Anawalt 1980; Moore 1983; Wechsler 1985; Yengoyan 1985; Knapp 1986). Material styles may communicate information about one's membership not only in the society as a whole but also in various social segments. Styles may also communicate messages about one's hierarchical position within society or some segment of it. Other potential messages include specific social, political, economic, and ceremonial identities and powers, and relationships with the supernatural. A material style may also passively indicate, rather than actively represent, such groups and/or relationships.

In past analyses of complex societies, archaeologists have not commonly considered this variety of processes and messages. They have instead focused on social prestige, as indicated by "status markers" (Helms 1981; Upham, Lightfoot, and Feinman 1981; Hodder 1982; Hantman and Plog 1982; Root 1983; Pollock 1983; Bradley 1984; Davis 1985; Clark 1986; Niles 1987; Earle 1990).

The study of material style is made even more complicated in complex societies in that diverse media typically are used to communicate diverse messages (Anawalt 1980; Fraser 1972; Fraser and Cole 1972; Clark 1986). Patterning can be complicated in several ways. First, single media may reflect multiple processes and communicate multiple messages, as modeled in the middle-range theory presented in Chapter 7. Second, different media may reflect different processes and messages in an independent or complementary manner. This occurs in part because media vary in their scale, rarity, visibility, decision structures, durability, malleability, portability, and other qualities. In turn, these

characteristics determine the contexts of artifact production and use, and affect an artifact class's potential role and articulation with society and individuals. Third, different media may reflect the same processes and messages redundantly (Braun 1979). This situation can arise from the active strategies of leaders and elites to reaffirm and institutionalize social processes and positions. Finally, the stylistic expressions of various processes and messages can be hierarchical or nonhierarchical, and can comprise a palimpsest, composite distribution.

To study the organizational diversity of complex societies and their material styles, the methods that have commonly been used to analyze styles within egalitarian societies are insufficient. These have included simple measures of similarity, homogeneity, or diversity that are applied to the attributes of a single artifact class and their distribution over planar space (e.g., Leone 1968; Whallon 1968; Longacre 1970; Tuggle 1970; Engelbrecht 1974; Braun 1977; Plog 1978, 1980). For complex societies, additional analytical approaches are required that consider (1) the associations and complementary distributions of multiple artifact classes or styles, and (2) the differential distribution of artifact classes and styles among sites at different levels of a settlement hierarchy. Thus, the study of material style in complex societies demands a contextual approach.

The chapters by Neitzel and Morris in Part IV present case studies that wrestle with the interpretive issues and methodological difficulties involved in studying material style in complex societies. Neitzel's chapter considers the Chacoan regional system, an example of a chiefdom-level society, which developed prehistorically in the northern U.S. Southwest. The chapter focuses on the spatial patterning of elite styles in hierarchical societies. Neitzel argues that the distribution of elite styles should reflect the differential distribution of elites in a settlement hierarchy. Since elites usually reside at sites in the upper tiers of the hierarchy, elite styles should be most frequent, most elaborate in their formal appearance, and/or most redundant in their attribute composition or in their representation in multiple artifact classes at sites at the top of the settlement hierarchy. Conversely, these properties should decrease or disappear at sites in successively lower levels.

Neitzel also argues, following Braun (1979), that redundancy in elite styles should reflect the multiple roles and powers that leaders may have. Redundancy may also indicate the degree of institutionalizing and stylistic reinforcement of those leadership positions. Thus, decreases in the redundancy of elite styles down a settlement hierarchy should occur as an indication of the fewer roles and/or more informal offices that characterize parochial leaders compared to paramount ones.

Neitzel confirms each of these expectations by examining the distributions of three artifact classes thought to have been associated with elites in the Chacoan system: architecture, turquoise jewelry, and the Dogoszhi style of ceramic decoration. The three artifact classes are found to decrease in frequency and/or elaboration in sites at successively lower levels of the site hierarchy, and to do so more or less redundantly. However, Neitzel also finds some variation in the distributions of the three styles. She attributes this variation to the fact that different media may have had different roles in Chacoan society. Whereas both architecture and Dogoszhi style ceramics probably symbolized the society as a whole, turquoise jewelry probably indicated an individual's social position and prestige. Architecture may also have had the function of signifying political power, especially in regards to the control of labor.

Morris's chapter considers the Inka Empire, an example of a state-level society that developed in the late prehistoric and ethnohistoric periods of the Central Andes. The chapter documents the different processes and messages that were actively conveyed or passively indicated stylistically in different classes of Inka artifacts. The media considered include architecture and site plans, textiles, metal ornaments, and pottery. Architecture and site plans have the highest visibility and the unique capacity to channel social interaction. Perhaps as a consequence, these media conveyed a variety of messages, all of which relate to the state. Architecture and site plans actively expressed Inka cosmology, political ideology, and the governing principles of Inka statecraft. They also indicated, both actively in visible attributes and passively in subtle attributes, the varying relationships of the state to local groups, such as the degree of autonomy of local groups.

In contrast, the messages conveyed stylistically by Inka textiles concerned social and personal identity. Textiles denoted an individual's ethnic group, age, social status, and prestige. The Inka also used textiles as political gifts to legitimize power transfers and to initiate reciprocal economic and political obligations. Like textiles, Inka metal ornaments conveyed messages of social and personal identity. In addition, they expressed cosmological principles and the divine powers derived from them. Finally, pottery functioned stylistically primarily to symbolize the local group. However, pottery was also used by the state for hospitality to local groups and to encourage reciprocity.

Together, the chapters by Neitzel and Morris illustrate how both interpretive models of stylistic behavior and analytical strategies, which were developed for egalitarian societies can not be applied directly to complex societies. The Chacoan and Inka studies show that complex societies exhibit both diverse and complexly organized processes and stylistic patterns. A middle-range theory of style that links processes to material patterns can not be complete unless it considers this complexity.

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Chapter 12

Elite Styles in Hierarchically Organized Societies

The Chacoan Regional System

JILL E. NEITZEL

The transition from egalitarian to hierarchical sociopolitical systems involves fundamental shifts in regional interaction, which should be reflected stylistically. Traditionally, anthropologists have examined this transition using the idealized types defined in cultural evolutionary schemes. Service's (1962) distinction between tribes and chiefdoms has been the most widely adopted, though it has been modified and subdivided by other researchers in their efforts to account for variation observed cross-culturally (e.g., Fried 1967; Goldman 1970; Renfrew 1974; Taylor 1975; Steponaitis 1978).

More recently, these typologies have been criticized for obscuring the true nature of cultural evolution (Udy 1965; Graves, Graves, and Kobrin 1969; F. Plog 1973, 1977, 1979). Studies have demonstrated that many of the variables used to construct the schemes exhibit continuous change through time rather than the step-like pattern implied by the use of types (e.g., Feinman and Neitzel 1984). However, both supporters and critics of the typological approach seem to agree that hierarchy development represents a qualitative shift rather than one of degree (e.g., Johnson 1978, 1982). With the appearance of formalized positions of ascribed leadership, interaction involves more than the horizontal ties between equivalent social units. There are also vertical relationships that link social units at different levels in the organizational hierarchy.

Archaeologists have not yet thoroughly investigated how the changing patterns of regional interaction that occur with hierarchy development should be reflected in the material record. Instead, most research efforts have been limited to defining criteria that distinguish hierarchical from egalitarian sociopolitical organizations (e.g., Peebles and Kus 1977). Also, egalitarian societies, rather than societies that have undergone hierarchy development, have been the subject of important case studies of the relationship between interaction and regional stylistic patterns (e.g., Conkey 1978, 1980; Braun and Plog 1982; Wiessner 1984). As a result, whereas a well-developed set of expectations for regional stylistic patterning has been synthesized for bands and tribes, the patterning found in

chiefdoms as well as states is just beginning to be investigated (e.g., Trigger 1974:99,101; Redman 1978:205–206; Upham, Lightfoot, and Feinman 1981; Helms 1981, 1987; Hantman and Plog 1982; Pollock 1983; Bradley 1984; Davis 1985; Niles 1987; Earle 1990; Morris, Chapter 13;).

This chapter presents a case study of regional stylistic variation within a chiefdom. The discussion is divided into three parts. First, the general process of hierarchy development is related to its effects on interaction and the communication of social messages. From these general considerations are generated several hypotheses about the distributions of elite styles in the Chacoan regional system of the American Southwest. Finally, these hypotheses are tested using three classes of material remains: architecture, turquoise jewelry, and decorated pottery.

POWER AND IDEOLOGY IN HIERARCHICAL SYSTEMS

In order to investigate regional stylistic patterning in chiefdoms, the process of hierarchy development must first be considered. Under what conditions does this process occur? As positions of leadership are formalized, what are the responsibilities and prerogatives of the individuals who fill these roles? How are these ascribed leaders able to legitimize their political authority and high status? Each of these questions is considered separately below.

The Development of Organizational Hierarchies

Hierarchy development is an integral part of the process of cultural evolution. It involves the vertical differentiation of leadership (Flannery 1972); and it occurs when a society's capacity for communicating information and implementing decisions is exceeded (Johnson 1978, 1982). Societies with any degree of organizational complexity may experience such difficulties. Using the terminology of Steponaitis (1978), egalitarian societies may be transformed into "simple chiefdoms" that have a single administrative level, and these simple chiefdoms may in turn be transformed into "complex chiefdoms" that have two or even three administrative levels.

In general, the number of levels in a leadership hierarchy is correlated with the political unit's areal extent and population size. Whereas the community is the maximal political unit in bands, regional polities emerge during the process of tribalization and subsequent hierarchy development (Braun and Plog 1982; Renfrew and Cherry 1986). Hierarchical polities integrate multiple communities of varying importance. As these communities become more differentiated, so does the leadership hierarchy (Johnson 1977). In simple chiefdoms one settlement usually serves as the primary administrative center, whereas in complex chiefdoms a hierarchy of primary, secondary, and even tertiary centers may be present (Steponaitis 1978). The population of these regional polities can range from several hundred people in simple chiefdoms to as high as 30,000 people or more in complex chiefdoms (Feinman and Neitzel 1984; Johnson and Earle 1987).

The process of hierarchy development is not inevitable or unidirectional (Blanton, Kowalewski, Feinman, and Appel 1981:13). Some societies experience difficulties in information processing and decision making yet do not develop additional administrative levels. Alternative adaptive strategies include alliance formation or warfare to alleviate foreign and internal problems, and changes in subsistence practices to alleviate environmental problems. Decentralization is another possible response to difficulties in information processing and decision making (Sahlins 1968). Also, those societies that do develop hierarchies do not necessarily maintain that level of complexity. However, vertical differentiation of leadership does seem to permit greater administrative efficiency (Johnson 1982). As a result, organizationally more complex systems may have an adaptive advantage in long-term survival and growth.

Having recognized that difficulties in information processing and decision making can result in cultural evolution, anthropologists must now enumerate the variety of stressors that cause these

difficulties (Flannery 1972; Trigger 1985). Possible causes include increases in population or in the administrative requirements of subsistence intensification, warfare, or long-distance trade. Clearly, all of these conditions may be systemically interrelated. More research is necessary to determine which, if any, has causal priority. However, they all can have similar organizational consequences: all "require group action and leadership and create opportunities for control and stratification" (Earle 1990).

Ascribed Leadership

By definition, hierarchy development is marked by the formalization of leadership. With the appearance of more levels in the administrative hierarchy, leaders become increasingly differentiated from other members of their society in prestige and wealth (Feinman and Neitzel 1984:57–59, 63–65). The physical manifestations of their privileged positions include special houses, clothing, marital practices, and mortuary treatment as well as various forms of obeisance by their followers. Those leaders who have the greatest prestige and the most wealth perform the greatest numbers of tasks (Feinman and Neitzel 1984:49–56, 60). These tasks include a variety of economic, administrative, judicial, military, ambassadorial, and ceremonial activities.

With hierarchy development, inheritance becomes increasingly important in determining who should fill leadership positions (Goody 1966; Feinman and Neitzel 1984:61). Unlike egalitarian societies, individuals become leaders based more on who they are rather than on what they have accomplished. However, even the most complex chiefdoms exhibit some flexibility in their rules of succession. Even when leadership is highly restricted to certain family lines, personal qualifications and achievements may determine who among the limited pool of qualified individuals actually assumes power. This can result in a high degree of competition for leadership, as has been documented in case studies of chiefdoms in Oceania (Sahlins 1958; Goldman 1970), Central America (Helms 1979), and Africa (Packard 1981).

Such competition can have two related consequences. First, aspiring leaders may devote considerable effort to activities such as warfare and long-distance trade that can enable them to accumulate wealth and demonstrate their leadership abilities (Goldman 1970; Packard 1981). Second, competition during the process of succession can contribute to political instability, causing cycles of expansion and fragmentation (Sahlins 1968).

Legitimization of Inequality

A leader in a hierarchical organization cannot achieve, maintain, or expand his or her position without the support of other members of the society. In the past, anthropologists have often explained this support as a response to the economic benefits of ascribed leadership. However, with the recent demonstration that the primary beneficiaries of the economic activities of leaders may be the leaders themselves (Earle 1978), the question of how these individuals are able to legitimize their political power and high status has begun to be reconsidered (Friedel 1981; Kristiansen 1984; Geertz 1985; Wechsler 1985; Kertzer 1988).

The answer to this question may lie in the relationship between secular and supernatural power (Service 1962:162; Balandier 1970:99–122). In prestate societies as well as many early states, political leaders are also religious leaders (see Goldman 1970; Frankfort 1978; Demarest 1984; Gilbert 1987). They serve as intermediaries to the gods or ancestors, carrying out the ceremonial rites that are necessary for maintaining connections with the divine world. In fact, in complex chiefdoms, powerful leaders are often viewed as the descendants of gods. This practice undoubtedly contributes to the increasing emphasis on inherited leadership that occurs during the process of hierarchy development. It is these sacred ties that serve to justify the political authority as well as the other social and economic advantages of leaders (Cohen 1976:102; Packard 1981; Earle 1990).

Given the sanctity of leadership, one strategy for individuals who are trying to increase or maintain their power is to emphasize their supernatural connections publicly (Balandier 1970:117; Cohen 1976:69, 75, 102; Friedel 1981; Strong 1984; Kertzer 1988). This strategy can be accomplished in a variety of ways, such as investing more effort in ceremonial activities (Bailey 1969:21,83; Valeri 1985), amassing vast amounts of ritual knowledge (Helms 1979), or displaying material symbols of the sacred world (Hodder 1982; Yengoyan 1985:332; Knapp 1986). These symbols can include not only religious paraphernalia, but also status markers which have ritual as well as social significance (Mills 1959:36; Cohen 1969; Turner 1975; Vincent 1978).

COMMUNICATING WITH STYLE

One of the consequences of hierarchy development is the increase in importance of material objects for communicating information. With higher population levels, it is impossible for each member of a society to know everyone else personally (Forge 1972); and with the differentiation of social statuses, there is more to know about each individual. Stylistic variation in certain kinds of objects, especially items of clothing, provides a means for communicating this information quickly and efficiently (Bailey 1964:24; Rabineau 1975:93; Wobst 1977; Root 1983:209–210). This section considers what is meant by the term “style” and what patterns should be expected when style functions as a symbol of status and power.

Style as a Symbol of Status

Over the past two decades, much anthropological literature has been devoted to defining precisely what is meant by the term “style” and to documenting the complexity of stylistic behavior. One of the primary results has been the recognition that when style is defined simply as “patterned variation in appearance” (Earle 1990), different aspects of this variation can reflect different kinds of behavior (Carr, Chapter 7; Pryor and Carr, Chapter 8). For example, variation in some kinds of artifacts is simply the by-product of traditional practices. For other kinds of artifacts, appearance is consciously manipulated to communicate social messages.

Often, the social messages concern group membership (Moore 1983). In egalitarian societies, where all individuals are socially equivalent, messages about group membership usually refer to the society as a whole. In hierarchically organized societies, however, a greater variety of messages can be conveyed stylistically. These messages can refer to membership in either the society as a whole or to particular levels in the social hierarchy (Fraser and Cole 1972:299). Stylistic variation can be used to identify leaders and to communicate the extent of their political power and prestige as well as the strength of their relationships with the gods (Cohen 1969; Fraser 1972; Anawalt 1980; Clark 1986: 9–10,82; Earle 1990).

The primary requirement for any variation in appearance that is used to communicate information about social position is that it must be highly visible (Sjoberg 1960:126; Fraser and Cole 1972:309; Wobst 1977; Anawalt 1980:33; Root 1983:210; Carr, Chapter 7). If the variation is not easily seen, then its messages cannot be received and responded to appropriately. In hierarchically organized societies, the most obvious way in which leaders are visually distinguished is by their “life styles” (Cohen 1976:75, 101). This use of the term “style” refers to all of the special possessions and activities of leaders. Materially, leaders possess objects that others either lack completely or have in smaller quantities (see Schiffer 1976:189–190; Hodder 1982; Clark 1986). Archaeologists have traditionally used differences in the relative frequency or occurrence of these so-called status markers to identify nonegalitarian sociopolitical organizations in prehistoric contexts. Although these studies have not explicitly dealt with the problem of style in hierarchically organized societies, they have done so indirectly through their concern with variation in the material possessions of leaders.

At a more detailed analytical level, particular classes of status markers may exhibit variations not only in their relative frequencies among different social classes, but also in their formal appearance (e.g., Fraser 1972; Anawalt 1980). Highly visible variations in appearance can convey information about social position and power that is partially redundant with variations in the relative frequency of a status marker (Braun 1979; Moore 1983:185). Such variations can also add sacred meanings to the messages of power and status (Fraser 1972:151–152; Anawalt 1980:43).

Examples of highly visible variations in appearance that can be found within particular classes of objects include differences in raw material, color, type and degree of ornamentation, quality of workmanship, and manner of display (Sjoberg 1960:126–127; Fraser and Cole 1972:303–306; Anawalt 1980:35,4; Hassan 1985; Niles 1987; Braun, Chapter 5). Less visible differences in appearance, such as variation in the execution of particular elements of design, can not be expected to communicate messages of social identity (Carr, Chapter 7). Instead, they may reflect differences in the training and abilities of individual craftsmen.

Expectations for Regional Stylistic Patterning

Given that variation in the relative frequency or appearance of material objects can be used to communicate social position, regional stylistic patterns should be expected to differ in egalitarian versus hierarchically organized societies. In egalitarian societies, those aspects of style that signal group membership should exhibit relatively homogeneous frequencies and appearances throughout the territory occupied by the group. Boundaries should be marked by the decreasing frequency of one group's style and the increasing frequency of another's, or by a change in the style's appearance.

In hierarchically organized societies, some styles may continue to represent the society as a whole and should be expected to exhibit spatial patterns similar to those seen in egalitarian societies. However, elite styles—those that are associated with leaders—should vary regionally in their relative frequencies and also possibly in their appearances (see Hodder 1982). Given the general correspondence between organizational and settlement hierarchies (Johnson 1977), these variations should correlate with the importance of sites (e.g., Niles 1987:231).

Styles that communicate messages of power, high status, and/or special relations with the gods should be represented in greatest relative frequency and/or be elaborated at the largest sites which served as the residences of leaders. They should occur in lesser relative frequency and/or elaboration, or even disappear altogether, in successively lower levels of the settlement hierarchy. Decreases in the elaboration of an elite style from higher-level to lower-level settlements are equivalent to decreases in the redundancy of stylistic messages of power, prestige, or relationship with the gods. Redundancy is significant in social terms, because it reflects the degree of institutionalization or formalization of power (Braun 1977) in the upper levels of a hierarchy.

Further research is necessary to test these expectations and to identify those factors that may produce regional variation in the relative frequency or elaboration of elite styles (Schiffer 1976:190–191; Root 1983:209–212). This variation is probably affected to a considerable extent by the degree of hierarchy development (Moore 1983:186). In addition, it may be influenced by such factors as the media on which these different styles occur, their different contexts of use (Morris, Chapter 13), the technical skill and energy invested in their execution (Niles 1987), and the sacredness of their symbolic content. Styles that are restricted to the largest settlements should be those executed by full time craft specialists using the most valuable raw materials (Clark 1986).

Expectations for the Chacoan Regional System

Empirical studies are necessary to test and refine expectations about regional stylistic patterning in hierarchically organized societies. The case that will be examined in the remainder of this chapter is the complex regional system which developed prehistorically around Chaco Canyon, New Mexico

(Judge 1979; Schelberg 1982; Judge and Schelberg 1984). At the time of its maximum extent, between A.D. 1050–1175, the Chacoan regional system encompassed the entire San Juan Basin in northwestern New Mexico, northeastern Arizona and southwestern Colorado (Figure 12-1) (Powers, Gillespie, and Lekson 1983).

The geographic, demographic, and cultural center of this system was Chaco Canyon, a 32-square mile area that contained 10 large towns, several smaller towns, and an almost continuous distribution of villages (Figure 12-1) (Hayes, Brunge, and Judge 1981). The canyon towns were planned, multistory structures that required considerable labor to build (Lekson 1984a). It has been estimated that the 10 largest towns in the canyon required the felling and transport of more than 200,000 trees over distances as great as 75 km (Betancourt, Dean, and Hall 1986) and that the largest town, Pueblo Bonito, required the quarrying of 500 tons of stone (Lumpkins 1984).

Disagreement exists as to how many people lived in the canyon. Proposed population estimates range from 2,000 (Windes 1984:84) to more than 10,000 (Fisher 1934; also see Pierson 1949; Drager

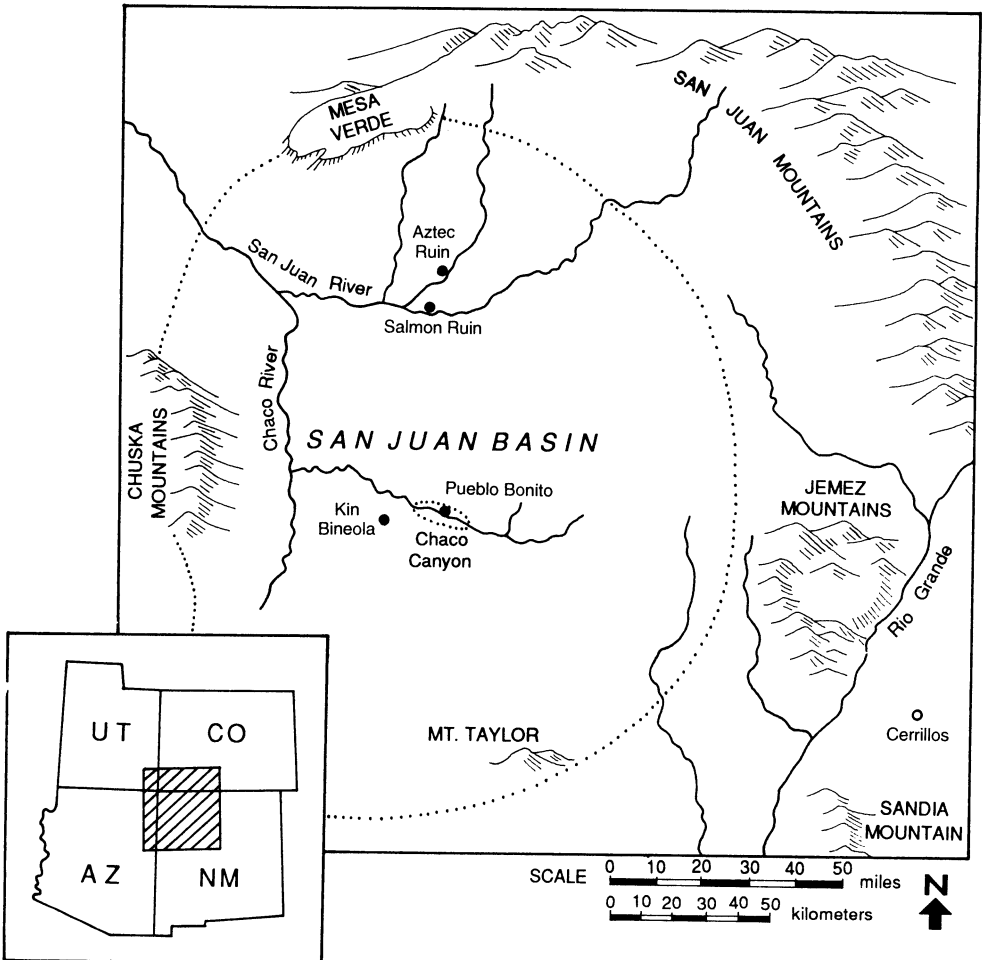


Figure 12-1. Map of the Chacoan regional system.

1976; Neitzel and Hantman 1993; Hayes et al. 1981). The canyon inhabitants practiced intensive agriculture and participated in the long-distance exchange of valuable items such as exotic birds and copper bells from Mesoamerica; shell from the Pacific Ocean, the Gulf of Mexico, and the Gulf of California; and turquoise from various locations in New Mexico, Arizona, Colorado, and Nevada. Evidence that the canyon towns may have served as the residences of high-status individuals has been provided by the discovery of elite burials at Pueblo Bonito (Pepper 1909; Akins and Schelberg 1984; Akins 1986).

The primary indicators that have been used to classify sites located outside Chaco Canyon as part of the Chacoan regional system have been architectural features that are the same as those found at the canyon towns (Powers et al. 1983; Lekson 1984b). More than 50 Chacoan outliers have been identified (Marshall, Stein, Loose, and Novotny 1979; Powers et al. 1983). The architectural basis for their classification has been reinforced by the discovery of a prehistoric road system that radiated from the canyon (Lyons and Hitchcock 1977; Ware and Gumerman 1977; Obenauf 1980; Kincaid 1983). The six major roads ranged in length from 20 to 60 miles. They connected at least 30 of the outliers with the canyon.

Using the relatively complete survey data that are available on the sizes of canyon towns and outliers (Marshall et al. 1979; Powers et al. 1983), a four-tiered settlement hierarchy can be defined for the Chacoan regional system. The four relatively discrete size classes consist of very large sites of more than 550 rooms, large sites of 250 to 450 rooms, medium sized sites of 70 to 250 rooms, and small sites of less than 60 rooms (Figure 12-2; Table 12-1). Generally, the small sites are outliers, the medium-sized sites are both outliers and canyon towns, and the large and very large sites are canyon towns. The major exception is Aztec Ruin (Morris 1928), an outlier which is the third largest settlement in the system.

Although the divisions between the very large, large, and medium sized towns are relatively clearcut, the separation between the medium sized and small sites is a subtle one (Figure 12-2). In fact, since settlements smaller than 250 rooms exhibit a continuous decrease in site size with site rank, there may be no clear hierarchy of these sites in function. Two possible size breaks can be defined, however, one just below the slight plateau at approximately 125 rooms and the other at the break between 60 to 70 rooms. For purposes of these analyses, the latter was chosen to distinguish medium sized from small sites.

Difficulties in distinguishing levels in prehistoric settlement hierarchies are not unique to the Chacoan case. In fact such difficulties should perhaps be expected. After all, the concept of a settlement hierarchy is derived from ideal models of economic geographers (e.g., Christaller 1966; Losch 1967). In such models, hierarchical levels are defined using lists of site functions. However, real world data on site functions often do not correspond to these models (Hodder 1972; Johnson 1975, 1977; Smith 1976; Crissman 1976; Crumley 1979; Grant 1986). In working with prehistoric data, archaeologists face an additional obstacle in that they must work with the material correlates of site functions instead of the functions themselves. For these two reasons, archaeological data often exhibit continuous patterning in the sizes of sites rather than the discrete breaks that would be expected in the ideal world.

Based on the earlier discussion of style as a legitimator of power in chiefdoms, expectations can be generated for stylistic patterning within the Chacoan regional system. Artifacts that served as markers of high status and political authority should exhibit different frequencies and elaboration in sites of varying importance. Elite styles should be relatively most frequent and/or most elaborate at the largest centers that served as the residences of individuals with the most power and of the highest status. They should be relatively less frequent and/or elaborate, if not completely absent, in each successively lower level in the settlement hierarchy.

The major obstacle to testing expectations about stylistic patterning within the Chacoan regional system is the incompleteness of the available data. Most studies of stylistic variation depend on analyses of artifacts. Unfortunately, systematic surface collections and excavations have been made at

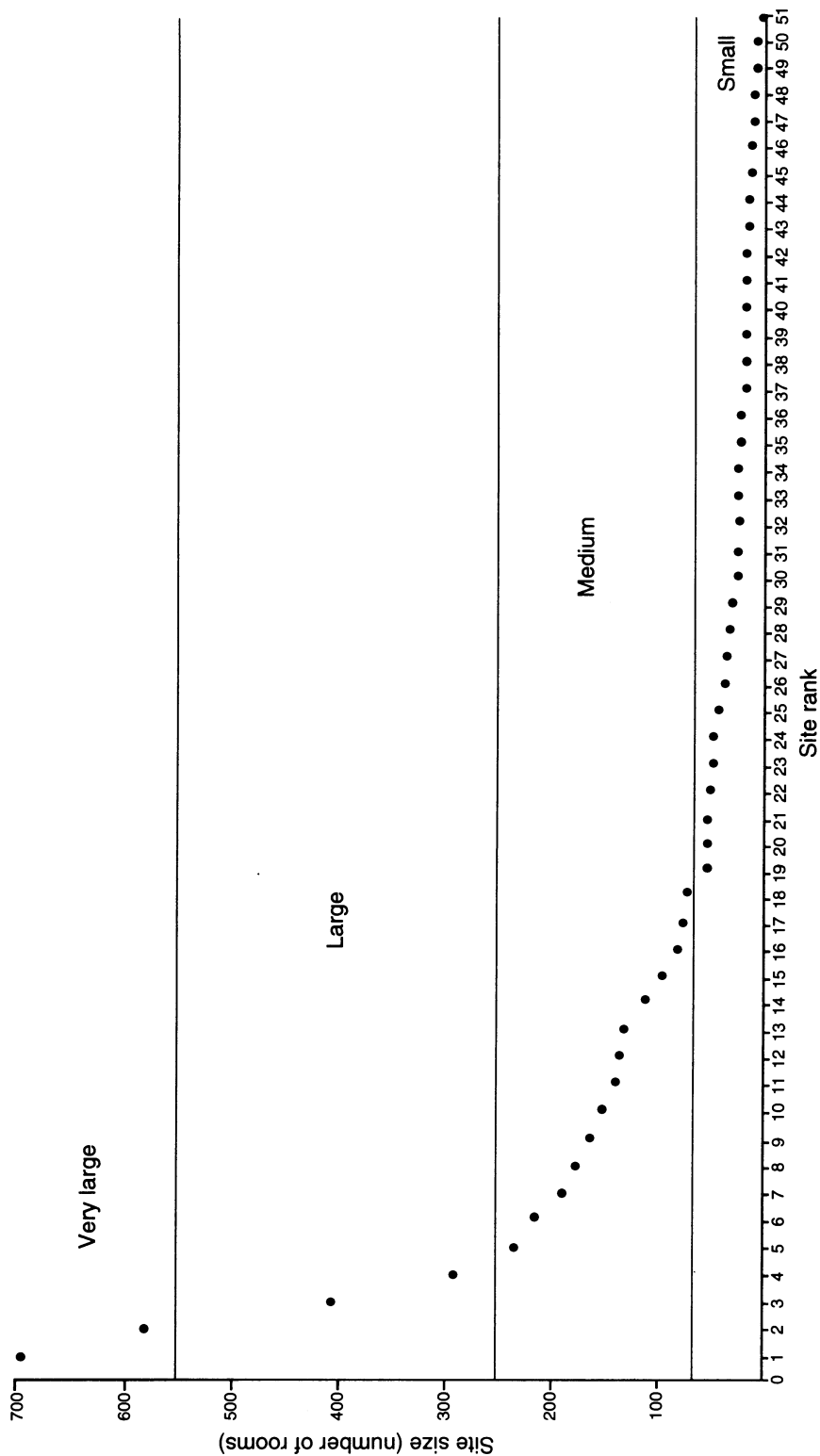


Figure 12-2. Rank-size plot of Chacoan settlements.

Table 12-1. Site, Architectural, Turquoise, and Ceramic Data

Site rank	Site name	Canyon/ outlier ^a	No. rooms ^b	No. architectural traits	No. turq/ exec. rooms	% Dogoszi/ site
1	Pueblo Bonito	C	695	6	163.93	46.0
2	Chetro Ketl	C	580	6		
3	Aztec Ruin	O	405	5		8.6
4	Pueblo del Arroyo	C	290	5	1.98	27.3
5	Kin Bineola	O	230	3		43.7
6	Penasco Blanco	C	215	5		33.3
7	Wijiji	C	190	3		
8	Salmon Ruin	O	175	3		1.9
9	Una Vida	C	160	4		
10	Hungo Pavi	C	150	4		
11	Pueblo Pintado	O	135	4		
12	Kin Kletso	C	135	3	.38	29.4
13	Pueblo Alto	C ^c	130	4		
14	Tsin Kletsin	C	115	3		
15	Allantown	O	100	3		
16	Casa Chiquita	C	80	2		
17	Site 41	O	75	2		
18	Wallace	O	73	1		
19	Chimney Rock	O	55	2		
20	Ida Jean	O	55	2		
21	El Rito	O	55	0		
22	New Alto	C ^c	51	2		
23	Skunk Spring	O	45	0		
24	Kin Ya'a	O	44	1		
25	Site 39	O	40	2		
26	Bis sa'ani	O	37	1		
27	Standing Rock	O	35	2		
28	Lowry Ruin	O	34	1	0	11.1
29	Peach Springs	O	30	1		
30	Haystack	O	26	2		
31	Casamero	O	26	1		
32	Sterling	O	25	1		
33	Guadalupe	O	25	1		
34	Escalante	O	25	1	1.13	
35	Upper Kin Klizhin	O	25	1		
36	Muddy Water/Hurley	O	25	0		
37	Muddy Water I	O	22	0		
38	Dalton Pass	O	20	0		
39	Kin Klizhin	O	18	2		
40	Pierre's Site 6	O	18	1		
41	Village of Great Kivas	O	18	0	.02	2.7
42	Twin Angels	O	17	1		
43	Greenlee	O	15	1		
44	Pierre's House A	O	15	0		
45	Pierre's House B	O	13	1		
46	Halfway	O	12	1		
47	Bee Burrow	O	11	1		
48	Hogback	O	10	0		
49	Houck	O	9	1		16.7
50	Muddy Water 33	O	7	1		
51	Grey Hill Spring	O	1	1		

^aThe criteria used to classify sites as canyon vs. outlier sites was whether or not they were located within the boundaries of the main part of Chaco Culture National Historical Park.

^bThe size data were obtained from Powers et al. (1983).

^cPueblo Alto and New Alto are located on the edge of the bluff that overlooks the north side of the canyon. Thus, they are in fact located outside the canyon. However, they were both classified as canyon sites here, because both seem to have been part of the complex of sites that was centered around Pueblo Bonito.

only a fraction of the canyon towns and outliers. Thus, any conclusions about regional stylistic patterning that are based on analyses of Chacoan artifacts cannot be made as strongly as they would if data from more sites were available.

STYLISTIC PATTERNING IN THE CHACOAN SETTLEMENT HIERARCHY

The expectation that the relative frequency or elaboration of elite styles should exhibit stepped drops in each successively lower level in the Chacoan settlement hierarchy can be tested as follows. First, styles that may have served as markers of high status or political authority must be identified. Second, the presence of these styles must be quantified in some way. Finally, the numerical values for sites at different levels in the settlement hierarchy must be compared. In this section, this analytical strategy is applied to the Chacoan style of architecture, turquoise jewelry, and one style of black-on-white pottery. The Chacoan architectural style is examined for regional variation in its elaboration, whereas turquoise jewelry and the ceramic style are examined for regional variations in their frequencies.

Chacoan Style of Architecture

The Chacoan style of architecture has been the primary criterion used to identify settlements that were members of the Chacoan regional system (Lekson 1984b:55). This style is distinguished by a polythetic set of attributes (Powers et al. 1983:15–16). Chacoan sites are large, well-planned pueblos. They range from one to four stories in height; and their shapes vary. The largest are roughly semicircular roomblocks with enclosed plazas, whereas the smallest are simply rectangular roomblocks. All of these buildings have thick core and veneer walls. Their distinctive masonry is executed in a variety of ways, consisting of different combinations of sandstone blocks, slabs, and spalls. Other defining characteristics of Chacoan architecture include great kivas, distinctive kiva furnishings, large interior rooms, high ceilings, and special roofing materials.

Chacoan towns clearly served as central places for their local settlement systems (Lekson 1984b:69). They differed from their surrounding villages both in size and general appearance; and they usually contained one or more kivas and/or great kivas—ceremonial structures lacking at villages (Powers et al. 1983). In addition to being the centers of ceremonial religious activity, there is evidence that the Chacoan towns were the residences of high-status leaders. The economic and social superiority of the towns' inhabitants is suggested by the presence of rare trade goods and specialized craft items that occur in lesser quantities or not at all in the villages. In addition, the amount of labor required for the construction of towns (see Lekson 1984a:257–263) suggests that their inhabitants had the political authority and economic resources necessary to mobilize the energy of others for their own ends.

If the Chacoan style of architecture was a symbol of ceremonial, social, and political power within the Chacoan regional system, then it should exhibit stepped drops in its quantity or elaboration in each successively lower level in the settlement hierarchy. Only the elaboration of architecture is addressed here. To quantify it, six diagnostic traits, which could be observed during surface surveys, were tabulated (Powers et al. 1983:15–16). Site size was not included, because it had been used previously to define the settlement hierarchy. Traits that could be documented only during excavations were also excluded so that the analysis could encompass all of the 51 towns recorded by Powers et al. (1983). The recorded traits include: the presence of an enclosed plaza, large-scale planning, core/veneer walls, construction of three or more stories, 11 or more kivas, and two or more great kivas. The cut-off thresholds for the latter three traits were defined by breaks in histograms done for all of the sites in the sample.

The number of these architectural traits at each site was compared to the site's ranked position in the settlement hierarchy (Table 12-1). The Gamma index, a nonparametric correlation procedure for ordinal comparisons, was used to make the comparisons (Thomas 1976:414–418). The Gamma index revealed an almost perfect correlation of $V = .98$. These results support the hypothesis that the elaboration of the Chacoan architectural style at a particular site is strongly correlated with that site's position in the Chacoan settlement hierarchy. Sites in the highest level exhibit the most traits of the Chacoan architectural style and thus the most redundancy in that style. Those sites in the lowest level exhibit the least traits and the least redundancy.

Although a high correlation was obtained in the statistical analyses, the crossplot of the data indicates that the expectation for stepped decreases in the number of Chacoan architectural traits with site size was not totally confirmed (Figure 12-3). There does seem to be a stepped decrease between the very large and large sites, which have six and five Chacoan architectural traits respectively. For medium and small sites, however, the pattern is continuous rather than stepped. Neither medium nor small sites have constant numbers of Chacoan architectural traits. Small sites can have zero to two; and medium sites can have two to five. Thus, not only do the ranges of possible states for these two site

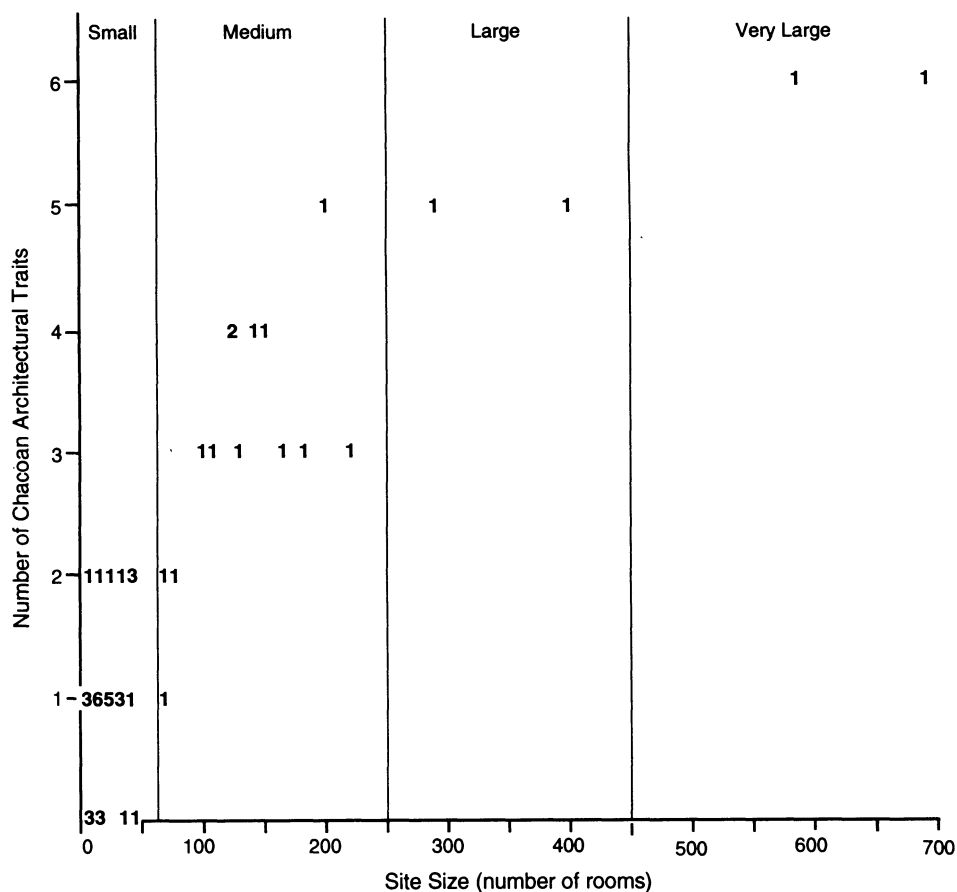


Figure 12-3. Crossplot of the numbers of Chacoan architectural traits present at each site in the sample (numbers in the body of the graph refer to the number of sites in each 10-room-size increment that have the specified number of Chacoan architectural traits).

classes overlap, but the range for medium sized sites overlaps with the constant value of five architectural traits, which characterizes large sites.

There are several possible reasons why the lower levels of the Chacoan settlement hierarchy do not conform to the expected pattern of stepped drops. First, perhaps the continuous distribution is what should be expected when large numbers of real world data from prehistoric contexts are plotted. Second, given the difficulties in defining these levels initially, it may be that the division between medium and small sites is not a functionally valid one. Finally, perhaps the division between medium and small sites was made incorrectly (e.g., it should have been made higher at approximately 100 rooms). This last explanation is suggested by the fact that it is the data points closest to the hierarchical divisions that do not conform to the expected pattern. For example, it is the smallest of the medium sized sites that have the low number of Chacoan architectural traits characteristic of small sites. Also, it is the second to largest of the medium sized sites that has the high number of Chacoan architectural traits characteristic of large sites.

Another possible source for the continuous rather than step-like pattern is the scale for the number of Chacoan architectural traits. If this is the case, two opposing interpretations can be made. First, it may be that the scale has too few states to evidence a stepped decrease. Alternatively, it may be that the scale is too fine-grained at its lower end to reflect functional differences among sites. The pattern shown in Figure 12-3 suggests that the scale should be reduced from six to four categories consisting of 0 to 2, 3 to 4, 5, and 6 traits.

When the crossplot is redone using this compressed scale, a stepped pattern is more evident (Figure 12-4). Although there is still some overlap between small, medium, and large sites, it involves

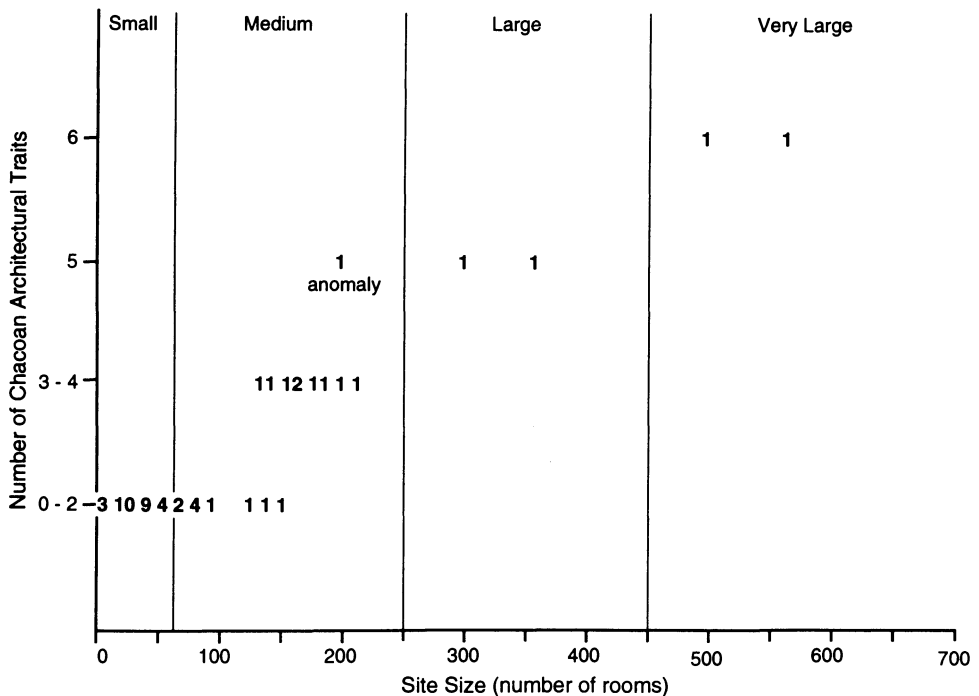


Figure 12-4. Revised crossplot of the numbers of Chacoan architectural traits present at each site in the sample (numbers in the body of the graph refer to the number of sites in each 10-room-size increment that have the specified range of Chacoan architectural traits).

only four sites out of the total of 51. As in the initial crossplot, those sites that are anomalies are the ones that are closest to the divisions between hierarchical levels. Thus, I would argue that the Chacoan architectural data does conform to the expectation that the distribution of elite styles should exhibit stepped rather than continuous decreases in successively lower levels of the settlement hierarchy.

Turquoise

Turquoise provides an example of a material that served as a marker of high status among the prehistoric inhabitants of Chaco Canyon. This material was fashioned into beads, pendants, and mosaics for jewelry. Since turquoise did not occur naturally in the canyon, the large quantities that have been excavated there by archaeologists must have been imported. The most likely source was the Cerrillos mine, which is located approximately 100 miles to the east-southeast (Weigand, Harbottle, and Sayre 1977; Mathien 1981). However, at least some turquoise was also obtained from mines in Arizona and Colorado (Sieglo 1970). Since four times as much turquoise has been recovered from Pueblo Bonito (over 65,000 pieces) than from all other Southwestern settlements combined (Snow 1973), it has been suggested that this site served as a major processing and manufacturing center for the export of turquoise to Mesoamerica (Weigand et al. 1977).

Burial data provide the best evidence that turquoise served as a marker of high-status positions and political authority within the Chacoan regional system. Based on their analyses of 232 well-documented canyon burials, Akins and Schelberg (1984) have identified three status positions (see also Akins 1986). The first is commoners who were interred at or near villages and whose few grave goods included no turquoise. The other two positions represent elites; they are distinguished from commoners by their burial inside towns, the greater care invested in their interment, and their greater quantities of grave goods which include turquoise. The two elite levels are distinguished from each other by the quantities of their associated grave goods. Paramount burials have the most of all types of materials, including turquoise.

Burials excavated from the largest town of Pueblo Bonito illustrate the importance of turquoise in distinguishing the two elite statuses (Pepper 1909, 1920; Judd 1954). There are two paramount burials, which were interred with approximately 6,000 and 13,000 pieces of turquoise. At the next level are the remains of 12 to 14 individuals who seem to have been buried in association with the paramount burials and who averaged 2,000 pieces of turquoise each. The fact that other burials with much lower quantities of turquoise have been excavated from Pueblo Bonito may suggest that there were three rather than two levels of elite status at this site. This three-tier ranking of burials, defined on the basis of quantities of turquoise, has been confirmed by the distributions of other types of grave goods such as shell jewelry and decorated pottery, and by the greater amounts of labor invested in preparing the two paramount burials for interment.

The expectation that the relative frequency of turquoise at Chacoan sites should exhibit stepped drops in each successively lower level in the settlement hierarchy was tested using the limited amounts of available excavation data. Only excavated sites were studied, given the absence of systematic surface collections from a representative sample of towns. The sites that were included in the analysis were those with published counts of both excavated rooms and pieces of recovered turquoise. Although only six sites met this requirement, they represent all levels in the settlement hierarchy (Table 12-1). For each site, the average number of pieces of turquoise per excavated room was calculated. These values were then compared to each site's ranked position in the settlement hierarchy. The correlation obtained with the Gamma index was $V = .78$. These results indicate that there is a strong correlation between the amount of turquoise recovered per excavated room at a site and that site's position in the Chacoan settlement hierarchy.

The decrease in the amount of turquoise with site size can be seen in the crossplot in Figure 12-5. With one exception, the pattern appears to be a stepped one. Given the small number of data points,

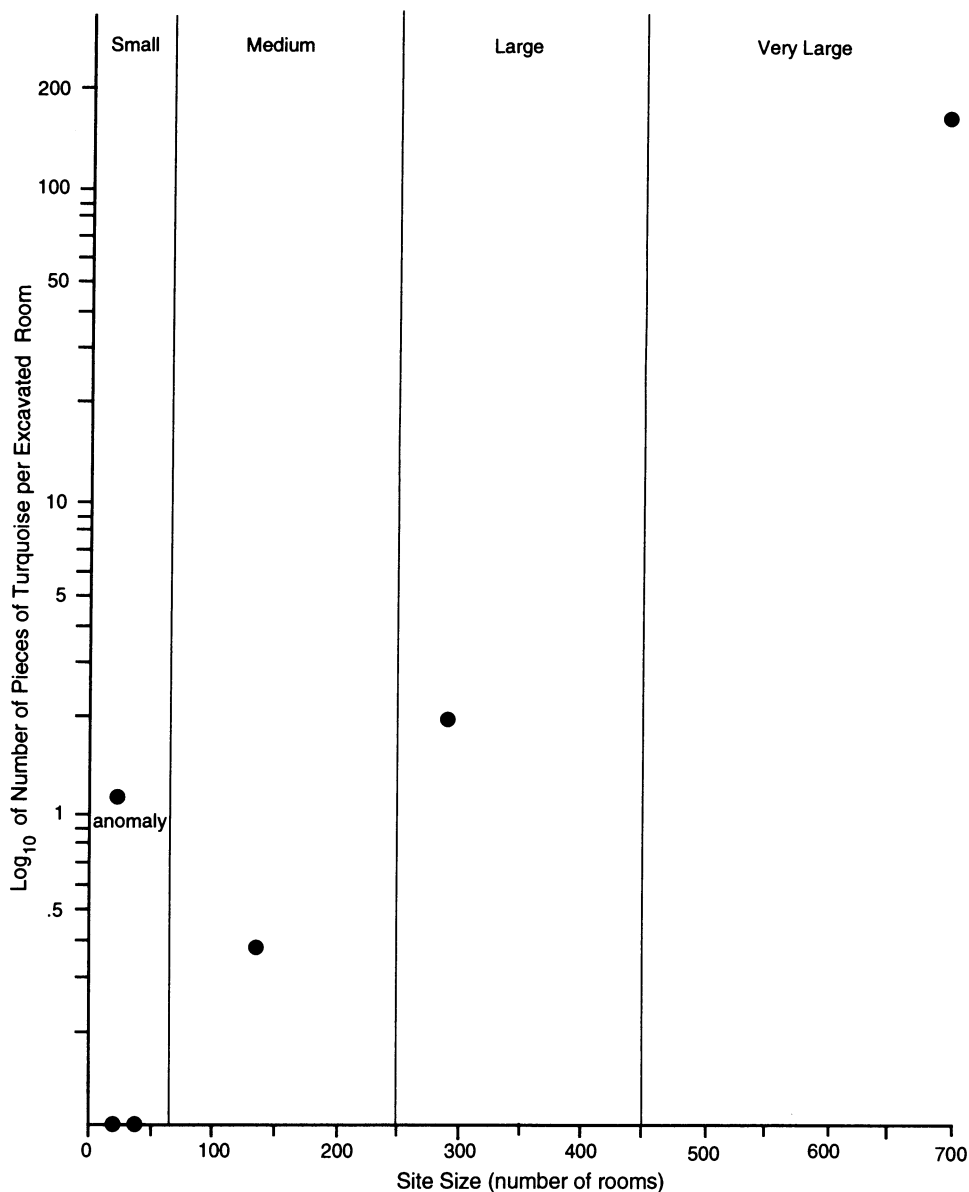


Figure 12-5. Crossplot of the numbers of pieces of turquoise excavated per room at each site in the sample.

however, this observation should be treated as preliminary and be subject to further verification when more data become available.

The one anomalous settlement is the small outlier of Escalante Ruin (25 rooms), which is located at the north western limits of the Chacoan system near Mesa Verde. The amount of turquoise recovered per excavated room at this site is within the range obtained for the large and medium sized

towns. However, more striking is the disproportionately high amounts of turquoise recovered from Pueblo Bonito (695 rooms). This town had approximately 80 times more turquoise per excavated room than the next highest ranking town in the sample. It should be noted that when the amount of turquoise at Pueblo Bonito was plotted on Figure 12-5 using a log-linear scale, the site did not stand out as much as when a simple linear scale was used. Nevertheless, both the graph and the raw data indicate that the residents of Pueblo Bonito dominated the turquoise trade within the Chacoan regional system.

Dogoszhi Style Pottery

Another example of a highly visible elite item within the Chacoan regional system is provided by black-on-white ceramics decorated in the Dogoszhi style. Of the seven design styles that have been identified for Southwestern black-on-white pottery (Hantman Upham, Lightfoot, Plog, Plog, and Donaldson 1984), the Dogoszhi is easily distinguished because it consists solely of hatched designs. S. Plog (1990) has suggested that this style served as a symbol of the Chacoan regional system's economic, political, and perhaps ceremonial power throughout the northern Southwest (also see Hantman 1980:217). This suggestion is derived from three sets of evidence from Black Mesa, Arizona, which is located outside the Chacoan system to the west of the Chuska Mountains (see Plog, Chapter 11: Figure 11-2). First, the appearance of Dogoszhi style ceramics on Black Mesa coincides with the peak of the Chacoan regional system. Second, Dogoszhi style ceramics on Black Mesa have been found in significantly higher frequencies at sites with kivas. Finally, Black Mesa ceramics decorated with the Dogoszhi style exhibit higher levels of covariation of design attributes than those decorated with other styles. Plog argues that this covariation or redundancy is expected for a style that has iconographic significance (see Plog, Chapter 11 for further discussion of the Dogoszhi style).

The Dogoszhi style may have also functioned as a symbol of status and power within the Chacoan system itself. This conclusion is supported by the fact that cylinder vessels, which are a unique form recovered almost exclusively from ritual and burial contexts at Pueblo Bonito, are nearly always decorated in the Dogoszhi style (Washburn 1980; Neitzel 1985). Assuming the Dogoszhi style functioned as a symbol of status and power within the Chacoan system, then it should exhibit stepped decreases in its relative frequency in each successively lower level of the Chacoan settlement hierarchy.

Given the limited availability of systematic surface collections, this expectation had to be tested using excavation data. Sites were included in the analysis if their excavations had produced at least 15 whole black-on-white ceramic vessels. These vessels were assumed to represent the range of variability that characterized the decorated ceramics from their respective sites. Although only 10 excavated sites had the required minimum number of vessels, they represent all levels in the Chacoan settlement hierarchy (Table 12-1).

The design styles used to decorate the whole black-on-white ceramic vessels from each of these sites were classified using the criteria outlined by Hantman et al. (1984). Then, the percentages of Dogoszhi style vessels at each site were calculated (Table 12-1). The percentages of Dogoszhi style vessels were grouped into three categories, 0 to 20%, 25 to 35%, and >40%. Comparisons were then made between these categories and the four levels in the settlement hierarchy. The correlation obtained with the Gamma index was $V = .68$. These results indicate that there is a positive correlation between the percentage of Dogoszhi style ceramics present at a site and the site's position in the Chacoan settlement hierarchy. However, this relationship is weaker than that found in the earlier analyses of the Chacoan architectural style and turquoise.

This decrease in the percentage of Dogoszhi style vessels with site size can be seen in the crossplot in Figure 12-6. If three anomalies are excluded, then the relationship appears to be a stepped one. Given the small number of data points, however, this observation should be treated as preliminary and subject to further verification when more data become available.

The most obvious anomalies are the outliers of Aztec Ruin (405 rooms) and Salmon Ruin (175

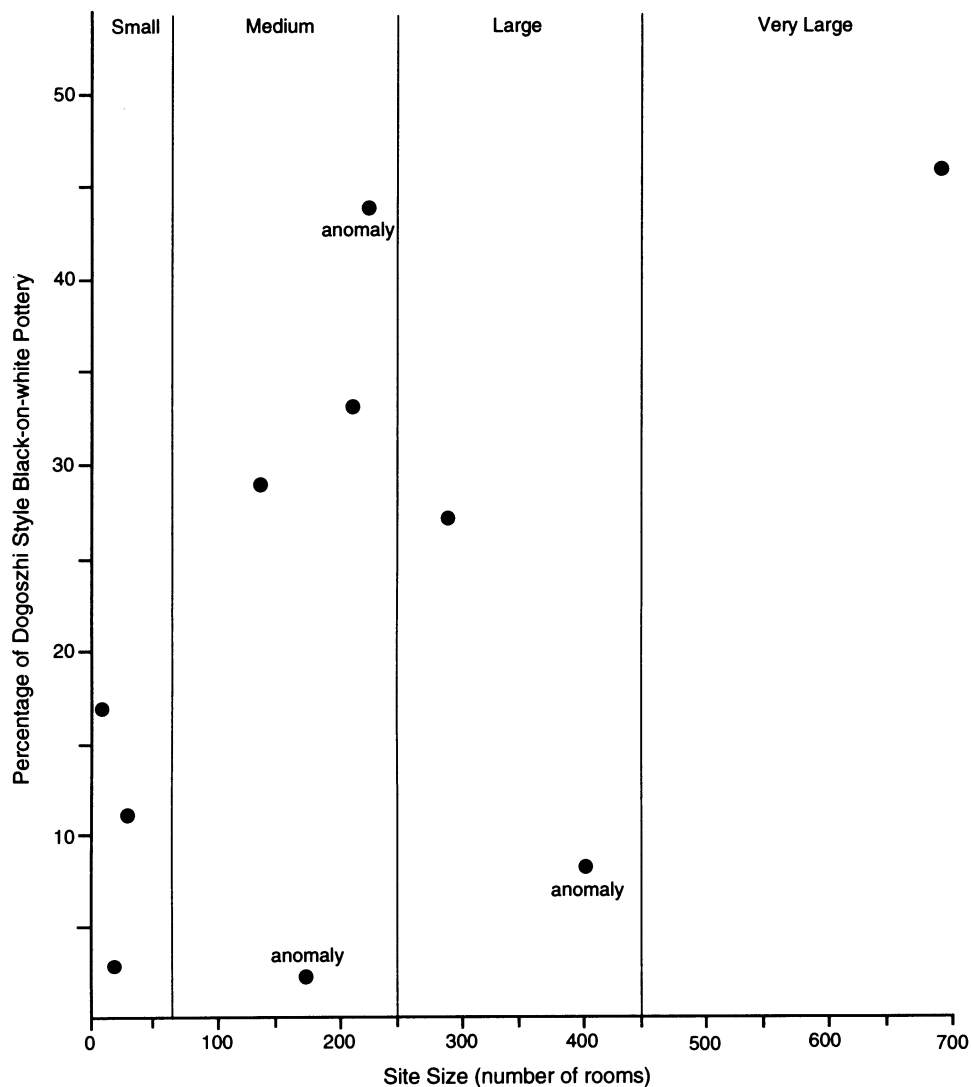


Figure 12-6. Crossplot of the percentages of Dogoszhi style vessels at each site in the sample.

rooms) (Figure 12-6). Although several factors may have contributed to their lower than expected percentages of Dogoszhi style ceramics, all are related to the problem of dating. The maximum influence of Aztec Ruin and its nearby secondary center of Salmon Ruin coincided with the decline of the canyon towns, after the time period considered here. Thus, the maximum size estimates used to classify Aztec and Salmon Ruins in the settlement hierarchy may be inflated. In addition, as Aztec Ruin emerged as the preeminent center of the San Juan Basin, it seems unlikely that its leaders symbolized their growing power and influence with the ceramic design style that was associated with the weakened canyon towns. Instead, they probably adopted their own design style—one that seems to have signified their special ties with the Mesa Verde area to the north.

It is interesting to note that two of the smallest sites in the sample, the Lowry Ruin (34 rooms) and Houck (9 rooms), have more Dogoszhi style vessels than both Aztec and Salmon Ruins (Figure 12-6). These deviations could result from differences in dating or they could reflect an additional function of the Dogoszhi style. In particular, this style may have helped to define the boundaries of the Chacoan regional system. That the small outliers with their higher than expected percentages of Dogoszhi style ceramics are also most distant from the canyon suggests this possibility. Lowry Ruin is located at the northwestern limits of the Chacoan system near Mesa Verde. Houck is located at the system's southwestern limits.

Another possible anomaly is Kin Bineola (230 rooms). Given the scatter of points on the crossplot, it may be that the position of Kin Bineola is simply part of the overall trend. However, the fact that this medium-sized outlier has nearly as much Dogoszhi style pottery as the largest canyon town of Pueblo Bonito suggests that the site can at least tentatively be identified as an anomaly. The reasons why Kin Bineola has such high percentages of Dogoszhi style ceramics may relate to the fact that enormous quantities of decorated ceramics were imported into Chaco Canyon from the Chuska valley, which is located approximately 50 miles to the west of the canyon (Figure 12-1). Kin Bineola is the largest site located between these two areas. It is less than 15 miles west-southwest of the center of the canyon and is adjacent to a road that leads to the canyon from the Chuska valley. These locational factors may have given Kin Bineola an important role in the Chuska ceramic trade, which may have led to large quantities of Dogoszhi style ceramics being stored and/or used at the site.

CONCLUSION

It has been argued that elite styles should be differentially distributed in hierarchically organized societies. Specifically, those styles that communicate messages of power, high status, or special relations with the supernatural should be most frequent or elaborate at sites in the uppermost level of the settlement hierarchy. The occurrence of these styles should decrease stepwise or even disappear altogether in successively lower levels.

The expected pattern was documented for three different elite styles in the Chacoan regional system: the Chacoan architectural style, turquoise jewelry, and the Dogoszhi style of black-on-white pottery. All are found in the greatest frequency or elaboration at Pueblo Bonito, the most important settlement in the Chacoan regional system. Each exhibits stepped decreases in relative frequency or elaboration in successively lower levels in the settlement hierarchy.

The presence of the same general pattern in all three classes of materials is an example of the redundancy that Braun (1979) has described for symbols of status. According to Braun, redundancy is one measure of the degree of institutionalization of social position. As a hierarchy of administrative offices is formalized, redundancy increases. In addition, I would add that redundancy should be at its greatest in the uppermost levels of the hierarchy. For example, a local magistrate might dress almost the same as the commoners he governs, using few symbols of his leadership role. In contrast, a paramount ruler such as a king or president usually dresses much more elaborately, using many different symbols of his special position.

In the Chacoan case, redundancy exists at two different levels, within artifact classes and between artifact classes. Within classes, it is seen in the co-occurrence of multiple Chacoan architectural traits and in the covariation of multiple Dogoszhi style design elements (Plog 1990). Between classes, it is also evidenced in the joint decrease in the elaboration of the Chacoan architectural style and the relative frequency of turquoise jewelry and Dogoszhi style ceramics for successively lower levels of the settlement hierarchy.

At the same time, the analyses also revealed differences in the strength of the statistical relationships between frequency or elaboration and site size. While the architectural data exhibited an almost perfect correlation ($V = .98$), the correlation of the turquoise data was not as strong ($V = .78$).

The weakest correlation was obtained for the ceramic data. These differences may relate to (1) variation in the portability or functions of elite styles executed in different media (see Root 1983:109–212) and (2) the different roles of a single style in different parts of a settlement system. The differences may also be due in part to variations in the sample sizes and data sources. Whereas the architectural data were obtained from surface observations at 51 sites, the turquoise and ceramic data were obtained from excavations at only 6 and 10 sites, respectively. Thus, the results of the turquoise and ceramic analyses may have been affected by both the extremely small numbers of sites that were studied and the representativeness of the excavated data from each of these sites.

It should not be surprising that elite styles executed in different media exhibit somewhat different spatial patterns. Since elite power is not a unitary phenomenon, different media may be used to symbolize its various aspects, which may in turn be manifested in different spatial contexts. In addition, since different media may vary in their visibility and in the amount of labor invested in them, the kinds of elite messages they convey and thus the spatial patterns they exhibit may vary. For example, in comparison to turquoise jewelry and decorated pottery, architecture is a medium that requires enormous investment of energy and therefore is most likely to symbolize the degree of political power that elites have over labor. Similarly, turquoise jewelry differs from architecture and pottery in its clear and constant association with specific individuals. As a form of personal adornment that was highly visible due to its distinctive color and highly valued due to its exchange over long distances, turquoise probably served as a symbol of social position and wealth. It is also possible that turquoise symbolized sacred positions or relationships. Finally, decorated ceramics require the least labor and are the least visible of all of the media considered here. These characteristics may be responsible for the Dogoszhi style having the weakest statistical correlation with site size.

The varying correlations of architecture, turquoise jewelry, and decorated pottery with the expected pattern may also result from their having served multiple functions within the Chacoan regional system. For example, in addition to symbolizing various aspects of elite power, status, and special relations with the supernatural within Chacoan society, the Chacoan style of architecture apparently served as a symbol of the system as a whole. This latter function has been accepted implicitly by archaeologists who have used the Chacoan architectural style as the diagnostic for identifying sites located outside Chaco Canyon as part of the Chacoan system. Also, the results of the ceramic analyses have suggested that the Dogoszhi style of ceramic design may have served to symbolize the system itself at its boundaries. An additional function of the Dogoszhi style may be evidenced at the site of Kin Bineolaa, where the higher percentages of this style may have reinforced the site's important role in ceramic exchange.

At the beginning of this chapter, I proposed that in comparison to egalitarian societies, a greater variety of messages are conveyed stylistically in hierarchically organized societies. These messages can refer to membership in either the society as a whole or to particular levels in the social hierarchy. This paper has focused on those styles that functioned to distinguish the different hierarchical levels in Chacoan society. However, it has also been suggested that at least one and possibly two of these styles also served as a symbol of the society as a whole. This dual function is intriguing, because it suggests that elites, as the most "visible" members of their society, together with their material symbols, assumed the role of symbols for the society as a whole (see also Huntington and Metcalf 1979). At present, it does not appear that there were any nonelite styles (e.g., projectile points, utilitarian ceramics, metates) that symbolized Chacoan society as a whole.

Many questions remain unanswered about the nature of regional stylistic patterning in hierarchically organized societies. Future work needs to expand the scope of this study in several ways. The distributions of both elite and nonelite styles in different media need to be analyzed through time in a number of societies. The results of these analyses then need to be compared to the stylistic effects of demographic, economic, and organizational changes. Only when a series of such case studies has been completed will anthropologists have the data that are necessary for making generalizations about how stylistic patterning and regional interaction are affected by the process of hierarchy development.

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Chapter 13

Symbols to Power

Styles and Media in the Inka State

CRAIG MORRIS

Complex societies are characterized by a great variety of groups: ethnic, economic, and social-hierarchical. In order for complex societies to function, it is necessary to regulate communication and interaction between groups. This is handled mainly by language. Most complex societies also have writing so that the code that controls appropriate behavior and interaction can be more precise as well as taught and learned more systematically.

Language and writing, however, are not the only means by which social and cultural information can be communicated. The designs executed in several media, such as textiles, ceramics, metals, stone, and various kinds of architecture, also constitute powerful means for communicating cultural values and conditioning behavior and interrelationships. The uses of “elite” craft products that archaeologists have studied for so long are intricately linked to their roles as symbols of relationships and positions. The emergence of these special goods as symbolic and representational media are central aspects of the process by which complex societies developed (Morris 1987; Neitzel, Chapter 12).

The principal challenge in studying the styles that are produced by a complex society is interpreting their typically great diversity. Styles and substyles must be defined and their distributions plotted. The meanings of their content and the determinants of their interrelationships must all somehow be ascertained. Although this complexity offers rich possibilities for interpretation, there is also danger of serious misinterpretation. While welcoming attempts to formulate general principles that affect the formation and meaning of styles, I agree with Hodder (1982) that interpretations with serious hopes of validity must be based on considerable contextual information. Either written evidence or an exceptionally rich archaeological context is necessary.

The purpose of this chapter is to illustrate the diverse ways in which stylistic variation in material

culture was created and used within one complex society, the Inka state. Variation in site plans, the details of stone architecture within sites, ceramics, metals, and weavings will each be considered. Single media will be shown to have been involved in multiple processes, and different media in different ranges of processes, depending on the context of use and the traditions of production. Styles in both administrative centers along the Inka road system, and local towns and villages far from it will be considered.

The consideration of various kinds of sites will allow us to note one of the essential axes of variation in the Inka case: that of sociopolitical and ethnic differences within the borders of the state. Certain stylistic elements are associated with the ruling group from Cuzco; others pertained to local groups they controlled. The interplay of these elements reflects the relations between groups.

Implicit in the chapter is a distinction that I make between visual style and technical style. By visual style I mean the visible, elaborative formal variation that is actively used to communicate messages. Technical style is formal variation, both visible and not, which results from individual or group traditional choices in the techniques of production. It encompasses aspects of Lechtman's (1977) concept of technical style and Sackett's (1982) concept of isochrestic style. It can actively communicate messages or passively reflect enculturation patterns.

RESEARCH ON STYLE IN THE INKA STATE

The Inka state, Tawantinsuyu, offers a good starting point for evaluating styles in a complex society. Its territory was vast, having expanded throughout Andean South America in the century prior to European contact (1532; Figure 13-1). During this time, it incorporated a variety of political units with local styles that were affected in varying ways by their incorporation. There was a hierarchy of authority consisting of several levels; there were specialized occupational groups; and power was sufficiently centralized to control numerous aspects of economic and social life. These factors combined to produce a very complex material record that we are only beginning to interpret.

A wide range of research exists related to the meaning of the distribution of various styles within the Inka realm. A full exploitation of it is beyond the scope of this paper. The classic work is Menzel's (1959) study of ceramics from the south coast of Peru. From Hyslop's (1984, 1993) pioneering work on architecture and ceramics, which looks at Tawantinsuyu as a whole, we are beginning to see how pervasive certain Inka elements, in spite of the fact that regional variation in the stylistic expression of the Inka presence is great. My own work has emphasized the context of variation in ceramics in relation to their use and, particularly, the effects of politics on style distributions (Morris 1972, 1987). Catherine Julien's study (in press) of the Inka ceramics of Cuzco provides a comparative source for work in the provincial areas.

As in other cases, most of the archaeological work dealing explicitly with the meaning of styles is based on ceramics. Hyslop (1993) has already summarized much of the information on architecture and ceramics and outlined some of the factors that contribute to their patterns of variation. One of the points Hyslop has made is that although a "Cuzco" or "imperial" style can be detected in both architecture and ceramics, the distribution and meaning of the two are different and are related to the distinct roles that they played in maintaining the state. Architecture is directly symbolic of the state and the world that it represented. The distribution of pottery, on the other hand, suggests its relationship to the more mundane realm of state hospitality, reciprocity, and labor management.

In this chapter I will emphasize and amplify these distinctions between media and suggest that textiles and metals may have somewhat different sets of meanings and distributions. I will also make the broader point that the media themselves had acquired special roles in an overall system of materials and styles. Whereas most archaeological studies of style have focused on ceramics, in the case of complex societies, that focus must be widened to encompass the full range of media in which

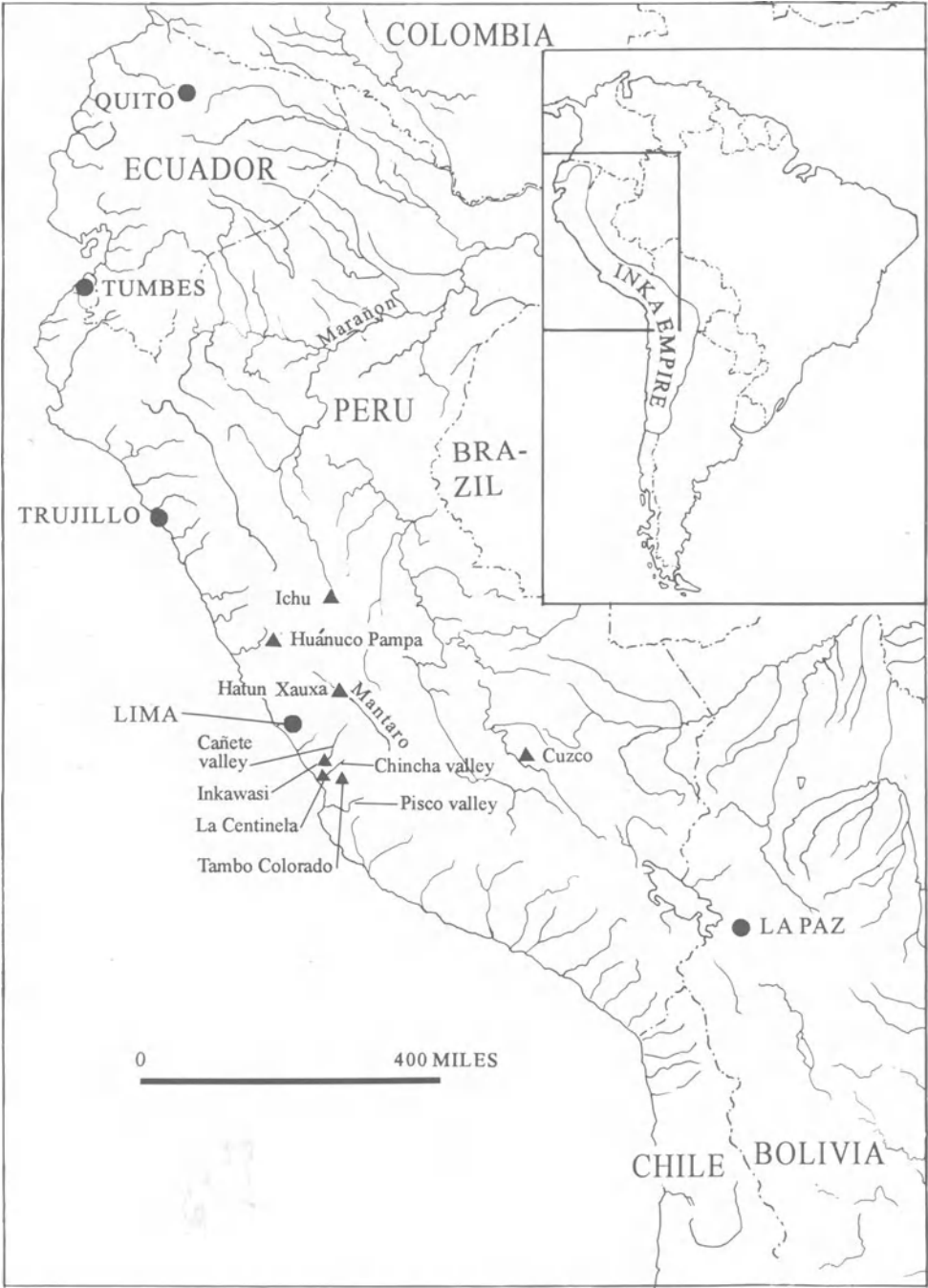


Figure 13.1. Map of the Inka state.

styles are reflected. In fact, if we are correct, in the Inka case ceramics were relegated to relatively minor and simple meanings in the overall style repertoire of the ruling group and its system of power.

ARCHITECTURE

Of all the archaeological materials in which style may be studied, architecture presents perhaps the greatest difficulty. Analysis must comprise a great multiplicity of levels, from simple construction elements through, in some cases, city plans. The interweaving of stylistic factors with those related to the utility of structures and construction techniques are especially complex. The usual issues about the differences in meaning to the original designers, builders, and users, and to archaeologists often seem insurmountable. As with other media, the task is one of carefully ferreting out the probable meanings of different kinds of architectural elements and their interrelationships.

Nevertheless, architecture offers a particularly rich body of data for studying complex societies. The monumentality of some of the architecture produced by these societies has traditionally been a key element in their archaeological recognition.

Site Design and Political Ideology

Certain aspects of the Inka site plan stand out as probably reflecting a potential role of architecture in state societies in general. First, architecture is perhaps the most public and directly political of the media through which the state could express its goals and its ideology. This is partly related to the impressiveness and visibility that can be achieved through architecture's sheer scale. Second, architecture and the arrangements of buildings within sites can actually help channel and structure social interaction. State building programs can thus become strategies of both ideological change and political growth. I believe that this was the case with the Inka. The political scheme is reflected in dozens of ceremonial and administrative centers—in the famous grandeur of their individual buildings and, especially, in the character of their site plans (Morris 1987). The organization of the sites along a road network of thousands of miles (Hyslop 1984) shows the deliberateness of the plan. The roads and the centers along them formed an almost literal map, a plan of action and interaction, for achieving the kind of statehood the Inka envisioned.

A systematic analysis of the ideological guidelines that influenced Inka statecraft has not been carried out. However, several studies of historical sources reveal factors in Inka religion, cosmology, and ritual that are crucial to understanding both sociopolitical organization and the planning of the sites that were the backbone of the state. At least two attempts have been made to relate some of these principles to actual architecture and planning. My 1980 study of the site plan of the administrative center, Huánuco Pampa (Morris 1987), showed its correspondence with the general outlines of the organization of the sacred sites (*ceques*) of the capital, Cuzco (Zuidema 1964, 1982a, 1982b). The precise "fit" of the ceque model cannot yet be ascertained with certainty, and meanings of the correspondences cannot be fully understood. Nevertheless, the similarities of structural and hierarchical relationships—for example, the repeated occurrence of two, three, or four ranked divisions—in the historical and architectural data suggest new ways for determining the nature and interrelationships of the groups that occupied major Inka sites. The point to be made is that much critical information relating to religious and political ideology was apparently encoded into the layouts of sites and perhaps even into planned systems of sites linked by roads.

The reflections of ideologies in site and regional planning were not just to give abstract symbolic expression to basic cultural ideas. They probably also served as guides to the ways people behaved in the centers. Town plans were monuments to the society's governing principles and, at the same time, served as liturgical templates. People were indoctrinated in the principles by moving through and performing state ceremonies in the towns. The coding of explicit instructions for social and political

performance into public architecture was especially important in a complex society that lacked writing.

Masonry Styles, Architectural Details, and the Determination of Political Subunits

Whereas the plans of Inka sites and public buildings appear to have been determined by religion, cosmology, and ritual, the details of architecture and construction were determined by a different set of factors. These include traditional local technological styles and varying relationships between the state and local groups.

Many highly visible public buildings in Cuzco and other important centers were built in the finely cut and gently beveled stone masonry that is a hallmark of Inka construction. The building of these structures appears to have been somehow controlled down to minimal details by official standards of architectural style. The simpler masonries of rough stones set in a clay binder seem to have been less subject to centralized control and, therefore, are a more reliable reflection of the styles and idiosyncratic techniques of the smaller sociopolitical units that made up Tawantinsuyu.

Broad survey and analyses, which would allow us to see the details of these distinctions, are lacking. Three examples, however, allow an indication of the sociopolitical factors that may affect masonry.¹

The Huánuco Pampa Administrative Center

The first example comes from the urban context of Huánuco Pampa. The formal and public architecture of this administrative center bears the official look of architecture in the pattern of Cuzco and other state centers. Many of the major public buildings are constructed in masonries that are very closely similar to those called “sedimentary” by Agurto (1987:158–160). These buildings are clearly associated with official activities—an interpretation supported by their positions within the site plan and by their associated artifacts.

The use of large numbers of small round structures for common residential buildings is one of the few highly visible characteristics that may be attributed to local architecture. However, the hands of the local masons who built Huánuco Pampa are also detected in other, subtle ways. The common architecture falls into the broad category that Agurto (1987:150–152) calls “rustic” in Cuzco. Such masonry consists of undressed stones placed one on another rather casually with only minor concern for fit. The spaces between the stones were filled with earth and small broken or rolled stones. I strongly suspect that a finer set of distinctions within this rather crude type of construction can be determined once a detailed analysis of common masonry is finished. For example, the selection of basically flat stones as opposed to rounded or irregular ones might be one dimension; the treatment of mud binder, in having or lacking small stones, and the kinds of stones employed, could be another.

Enough is known about the masonry used by groups in the surrounding region to say that local construction techniques were not simply executed unmodified in the state center. The minor differences in “rustic” type construction within Huánuco Pampa is rather more what one would expect from relatively loosely supervised workers following general principles, but with minor details left to

¹EDITORS' NOTE: The three cases illustrate three kinds of syncretism of state and local styles. First is the incorporation of apparently passive, technological, local styles within active, visual State administrative architecture (at Huánuco Pampa). Second is the incorporation of apparently active, visual State styles within local village architecture (in store houses in villages of the Huánuco hinterland; at La Centinela). Third is the integration of apparently active, visual, local styles within active, visual State administrative architecture (at Tambo Colorado). The interpretive labels, active and passive, which are attached to these examples are those of the Editors rather than Morris.

their own habits. Whether these “habits” result from individual or group differences in technical style remains to be sorted out.

One detail that we noted at Huánuco Pampa was the occasional use of rounded interior corners on rectangular buildings. This occurs frequently in local Chupaychu villages (Morris and Thompson 1985:119–150). It is the kind of attribute that may allow us to distinguish the subject group that provided the labor and link them to the ruling group that directed the administrative center. Enough variation is present to suggest that a more exhaustive study may give some indication of the groups who actually built Huánuco Pampa, if not identify the style sources of some of its “rustic” buildings.

Villages of the Huánuco Hinterlands

Villages in the Huánuco hinterland allow us to focus attention on stylistic relations in the opposite direction: the evidence for Inka architectural elements on the buildings in the towns of conquered peoples. Architecture at the village level in Huánuco does not have a clear visual style. It has minor variations in technical style that do not demand attention in the way that grandiose Inka buildings or site plans do. Some patterning in the architectural record follows the outlines of sociopolitical groups as identified by the 1562 inspection of Íñigo Ortiz de Zuñiga, but there are also some contradictions (Morris and Thompson 1985:119–162).

At least one thing is evident in the villages of the Huánuco region: The Inka made no effort to build their own structures in the preexisting local settlements, nor did local builders often imitate Inka buildings. The cases where one does detect elements that may have been borrowed from the rulers from Cuzco relate mainly to building form. The relationship seems to be functional rather than stylistic. The technical style of the masonry is purely local. The most striking example of Inka building forms in local contexts is the formal storehouses in village sites. Aukimarka is the best studied case (Morris and Thompson 1985:143–148). Its warehouses have the diagnostic small door with high threshold, which is similar to warehouses at Huánuco Pampa. However, the ones at Aukimarka are smaller and the masonry is purely local.²

Sites of the Chíncha and Pisco Valleys

Ongoing field research by my colleagues and myself in the Chíncha and Pisco valleys on the Peruvian south coast echo only some of the results for Huánuco. Chíncha was a rich and powerful kingdom whereas Huánuco was a collection of smaller and less powerful polities.

Within Chíncha, the state architectural style is clearly evidenced by sites and installations built by the Inka for state functions. However, the great majority of sites and residences continued with very little modification or evidence of the presence of the Cuzco overlords. A major difference between Huánuco and Chíncha-Pisco is that the construction material is primarily adobe rather than stone.

Only two of the sites that we have studied in the area—Tambo Colorado and La Centinela—were the scenes of major construction with the easily recognizable imprint of Inka architectural style, which includes strict rectangular structure plans and trapezoidal shapes in architectural details. Closer examination reveals that construction techniques, particularly the use of sun dried adobe bricks instead of form laid “tapia” courses, are also an indication of Inka involvement. This evidence is particularly important because it allows one to note Inka modification of existing buildings as well as new construction.

Tambo Colorado, in the Pisco Valley, is especially close to the Huánuco pattern. Although it

²EDITORS' NOTE: This case seems to illustrate the incorporation of some aspects of active, visual State style within local village style. It is significant that storehouses are points of articulation of the State and local groups.

adjoins a site probably built before Inka times, the bulk of the construction as well as the site plan are classically Inka. The site probably served in some sense as an Inka administrative center. Its construction was of stone and mud covered by a heavy layer of mud "plaster." It was then brightly painted in bands of yellow and red, the source of the site's modern name. The basic mud and stone construction is common for sites in middle- and upper-valley locations like Tambo Colorado. However, the mud plaster and bright paint appears to be an Inka characteristic that set the site firmly apart. Along with its site plan, trapezoidal doors, windows, and niches, the strong surface treatment made its Inka identity apparent and highly visible for many kilometers.

We first thought that, except for the earlier adjoining architecture, the buildings of Tambo Colorado reflected Inka style down to the last detail. In 1987 I noted, however, that this was clearly not the case. One remaining element of what had once been a much larger frieze on a building in an important sector of the site was very similar to the friezes that adorn many major buildings in the lower Chíncha Valley. Whereas the plan, the door, windows, and many other details of the building were entirely Inka, a major element of the Chíncha style had been added as a cornice to the building that could be seen from outside the compound in which it was located.³ There are several other important aspects of the location of this building and its frieze that are beyond the scope of this paper. The important point is that visual state architectural style clearly and unambiguously underscores the presence and power of the Inka and, at the same time, shows that an important local power was incorporated. Architectural style in this case seems to match, symbolize, and even advertise the nature of political relationships between two subgroups of the larger society, as we can partially see them in written sources and other archaeological materials.

The other site containing Inka construction is La Centinela, the principal center of the Chíncha Kingdom, the important local polity in whose style the frieze had been constructed at Tambo Colorado. La Centinela is different from any other site we have considered in that it incorporates major Inka construction into an important site built in pre-Inka times.⁴ Specifically, a large compound containing many ceremonial and administrative buildings reminiscent of those at Huánuco Pampa and Tambo Colorado had been constructed to one side of a large pyramid mound built before the Inka conquest of Chíncha. The architecture was Inka in form and in construction details. The emphasis on white for many of the walls and a small pyramid mound incorporated into one corner of the Inka complex may have been a bow to the pre-Inka architecture of the site. But the Inka had left no doubt about their presence by building a new central compound to their own specifications. The powerful trapezoidal gateways and tall niches were almost as notable as the profiles of the Chíncha Period pyramid mounds with which they contrasted.

We originally believed that Inka architectural work at La Centinela was limited to the large ceremonial and administrative compound. More recent research has revealed modifications to several preexisting (Chíncha Period) compounds that are visually subtle, but may have had more profound effects on activities in the compounds. Walls were often refaced with adobe bricks, and changes were made in patterns of traffic flow. The changes were not accompanied by the more obvious architectural details such as trapezoidal doors and niches. Excavations are uncovering substantial quantities of Inka style ceramics, as yet unpublished.

At this point we can only speculate about the meaning of these architectural modifications that were significant but stopped well short of using the full range of Inka architectural elements. The unusual complexity of the interaction between the Inka and the non-Inka at La Centinela underscores the potential of architecture as a sensitive indicator of the relationships among the people who built and used it.

³EDITORS' NOTE: In interpretive terms, active, visual, local style has been integrated within the active, visual State architectural style.

⁴EDITORS' NOTE: In interpretive terms, visual, State architectural style was integrated with active, visual, local architectural style.

CERAMICS

Ceramics are the most ubiquitous carriers of style found by archaeologists. However, it is easy to overestimate their importance in the overall scheme of the total stylistic repertory of a society merely because of their ability to survive.

Ceramics have generally been regarded by archaeologists as a faithful carrier of local style. One reason is that ceramics are heavy and do not lend themselves well to long-distance shipment. Thus, when stylistically anomalous vessels from afar are found in prehistoric contexts, it is the stylistic idea rather than the vessel which is usually thought to have moved. The Inka case largely reflects the predominance of ceramics as a relatively local vehicle of style sometimes susceptible to outside factors. The great multiplicity of stylistic varieties, and their distributions reflect the complexity of the sociopolitical situation, including its hierarchial aspects.

Ceramic Styles and Nomenclature

The ceramics in the Inka domain can be grouped into three broad classes. I reserve the term "Cuzco Inka" for pottery actually produced in the area of the capital. Cuzco Inka pottery is characterized by red, black, and white geometric designs, which are composed of lines, triangles, patterns resembling elements of ferns, and occasionally animals. The shape repertory of the capital includes the famous narrow neck "aryballus" jar, plates with various kinds of handles, and jars with pedestal bases. In contrast, I use the term "State Inka" style for vessels closely imitating the Cuzco variety but made in other regions of Tawantinsuyu. Visually, these forms are nearly identical to Cuzco Inka. The most accurate way to distinguish them is by their technological attributes (D'Altroy and Bishop 1990). "Provincial Inka" is the term I use for vessels that have a mixture of Cuzco and local elements. This combination occurs in ceramics, just as it does in architecture. I use the generic term, "Inka pottery," to include Cuzco, State, and Provincial styles. Finally, there are innumerable local non-Inka styles, which can be identified from the details of their shape and decoration. Many of these have yet to be defined and catalogued.

Ceramic Style Distribution

A few examples will show how some of these varieties are distributed, and will allow us to consider what some of the distributions and particular combinations of elements may indicate. It should be stressed that the distributions of Inka architecture and Inka pottery (both State Inka and Provincial Inka) are not coterminus. Although most major centers of highly visible Inka architecture contain a substantial percentage of State Inka or Provincial Inka pottery, all do not. The presence of Inka pottery in contexts without Inka architecture is common. Hyslop (1993) has covered much of the available data on these distributions for Tawantinsuyu as a whole. I will concentrate on more specific examples at the levels of sites and regions.⁵

Huánuco Pampa and Its Villages

The contrasts between the pottery found in the centers built by the state along its road network and the pottery of the towns and villages of local polities are as marked, as are the architectural

⁵EDITORS' NOTE: Five cases are presented. The first two document administrative centers (Huánuco Pampa, Hatun Xauxa) with substantial amounts of State Inka vessels and local villages with lesser amounts, depending on geographic and historical particulars. The next two cases concern administrative centers (Tambo Colorado, Inkawasi) with few State or Provincial vessels. The last case (La Centinela) provides an example of the synthesis of pre-Inka and Inka elements so as to form a Provincial style.

contrasts. At Huánuco Pampa, the variety of the State Inka style is a close copy of Cuzco Inka, but lacks the complete repertory of shapes and decoration. More than 90% of the pottery excavated at Huánuco Pampa and Tunsucancha (Morris 1966, 1972; Morris and Thompson 1985) are in the State Inka style. The villages that the Inka conquered are at the other end of the spectrum. Our surveys of these sites often turned up no State Inka sherds; most had fewer than 10. The one exception among the local villages was Ichu, home of the principal Chupaychu leader, which produced a substantial number of State Inka sherds of the same variety found at Huánuco Pampa. The structure that we believe may have been the residence of the leader himself had a particularly high proportion of the sherds. The great majority of sherds in these villages are in local styles. They include very few Inka traits.

In sum, Inka pottery in Huánuco clearly followed the lines of power as they are documented in 16th century colonial sources. It is confined to the centers of the state itself and to local villages where the state and a local polity articulated. The observation that ceramics played a role in reciprocity and state hospitality (Hyslop 1993) is important here. The Chupaychu leader had access to Inka pottery as guest and servant of the Inka. It may also have been convenient for the state to have had the local leader offer his own hospitality from vessels marked with the state style.

Hatun Xauxa and Its Villages

The upper Mantaro region, also in the Peruvian central highlands, shares some ceramic features with the Huánuco region. The upper Mantaro has been extensively studied for the Wanka polity and its incorporation into the Inka state (Earle, D'Altroy, LeBlanc, Hastorf, and LeVine 1980; Earle, D'Altroy, Hastorf, Scott, Costin, Russell, and Sandefur 1987). The ceramics of the large Wanka administrative center of Hatun Xauxa are predominated by a variety of State Inka style pottery. Although the details vary somewhat from Huánuco, the general picture of ceramic styles and their relations to the Cuzco Inka style on the one hand and local styles on the other does not seem substantially different. The pottery was produced for the state under some degree of state control.

The difference between the data from the Huánuco and Mantaro regions lies in the frequency of Inka style pottery in local towns and villages. The Mantaro towns and villages seem to have greater percentages of Inka ceramics than any site we studied in Huánuco except Ichu (D'Altroy and Bishop 1990). These results may reflect different circumstances in the relationships between the state center and the local settlements in the two regions. Specifically, the Mantaro sites pertained to the Wanka, a powerful and important polity when conquered by the Inka. They are also relatively close to the Hatun Xauxa administrative site. In contrast, in Huánuco, the Chupaychu and the other groups that we studied were much smaller. Also, the Huallaga valley where they were located was more than 60 km from the Huánuco Pampa administrative site. It is not surprising that heavy State Inka pottery was not carried great distances except in special political circumstances.

The State Installations of Tambo Colorado and Inkawasi

The contrasts of this third example are sharper. Two of the most obvious and important examples of Inka architectural complexes on the coast are the sites of Tambo Colorado and Inkawasi in the Pisco and middle Cañete valleys, respectively. Tambo Colorado has been discussed above. Although it shows evidence of interaction with local styles and polities, the overwhelming Inka imprint on its architecture and site plan is clear. The situation is similar at Inkawasi (Hyslop 1985). However, neither site shows the preponderance of Inka ceramics with which we are familiar at large highland installations.

Studies of the ceramics at Tambo Colorado and Inkawasi are not sufficient for me to label them either State Inka or Provincial Inka, much less to determine their place of manufacture. However, Hyslop (1984:111) categorizes only 11% of his surface collection of 349 sherds from Tambo Colorado as Inka and Inka-influenced. He cautions that the sample from a site probably combed by tourists

looking for decorated pottery is questionable. However, he also suggests (1984:292) that low percentages of Cuzco style ceramics at state settlements are a common pattern in much of Tawantinsuyu away from Cuzco and off the main highland road.

The State Installation of La Centinela

Menzel (1959) and Menzel and Rowe (1966) pointed out many years ago the great extent to which Inka stylistic elements were adopted by Chinchá potters. Our ongoing work at La Centinela in the Chinchá valley corroborates this. There, it does not appear that pottery in the style of the Inka was limited to state functions in state sites while local styles continued in other contexts. Instead, a pottery that combines Inka and Chinchá characteristics largely replaced pre-Inka Chinchá pottery, at least at La Centinela. While in form and in major outlines of design the pottery copied Cuzco style, it also incorporated elements of Chinchá pottery design. Inka traits predominate in this combination. The pottery can be called Provincial Inka not only because of its synthesis of elements but also because its pervasive distribution in the site suggests that it was not limited to state functions.

Systematic distribution studies are yet to be done, but I have the impression that the Provincial (Chinchá) Inka was produced by Chinchá potters under much less direct control and supervision than was the case with the State Inka style pottery found in Huánuco. It was the pottery adopted by Chinchá as its own. Important evidence for this is pointed out by Menzel (1959): Unlike many of the ceramic styles from the Inka Period, that in Chinchá survived the European invasion. The opportunity to reject Inka influence was passed up, and pottery with Inka stylistic elements was made into the Colonial Period.

ARCHITECTURE AND CERAMICS COMPARED

When the style distributions of architecture and ceramics do not correspond, to ask which is the exception and which is the primary pattern is probably inappropriate. A more useful approach is to look at the various media as different variables responding to different determinants. For example, one might ask, in terms of determinants, why a major architectural effort was not always matched by a major effort to bring the ceramics into harmony. This is particularly the case in Tambo Colorado, where important public architecture suggests that feasting and public ceremony would have played a large role, yet Inka pottery is infrequent.

Of course we cannot see the details of the historical events that might make such differences understandable, and we know that the Inka state was less than a century old and still evolving rapidly. It might seem easier for a state to organize local ceramic production in the state style than to build a monumental site with official architecture. However, this may be to miss both the organization of Inka crafts and labor and the priorities of conquest and consolidation. Pottery might have been more of a traditional community specialty, with rather conservative artisans making pots in their own designs. In contrast, construction, especially monumental construction, was a common part of *corvée* labor obligation. It was well established, probably from pre-Inka times, as a task one performed at the bidding of a leader, and it was perhaps easier for that leader and his representatives to set the design requirements. In addition, state construction work was usually done outside of the community context, often far away. Thus, as emphasized in some other papers in this book (Roe, Chapter 2; Pryor and Carr, Chapter 8; Rosenthal, Chapter 10; Plog, Chapter 11), the context of production and historical context are critical constraints on stylistic processes and are essential for understanding style distribution.

In terms of priorities, I would guess that in the initial phase of conquest and occupation, architecture would have been a more effective and immediate symbol of the Inka's arrival and control. It is easily visible from afar, attests directly to power and wealth, and establishes a sense of permanence

not possible with any other medium. Inka architects were masters at combining simplicity, huge scale, and integration with the setting into works that were so immediately accessible to people from other groups that they have entered history as one of the world's most universally recognized architectures. Inka pottery is also simple and bold, but its impact, visually and especially in political terms, would have been of an entirely different scale and nature.

METALS

Metals have played a major role in virtually all complex societies. The use of metals in items of personal adornment that indicate status and prestige is almost synonymous with rigidly hierarchical sociopolitical systems. Many inherent qualities in metals lend themselves to this role in representing status and prestige. Their surface color (Lechtman 1984) is probably the primary factor. In the Inka case, the brilliant and easily visible colors of gold and silver had come to symbolize the light of the sun and the moon, forming an important way of linking cosmology and divine power to elites and rulership. The scarcity and difficulty in obtaining the raw materials from which metal objects are made is an obvious factor limiting their availability and adding to their suitability as prestige objects.

Another property that is related to the role of metals in state level societies is their durability. Markers of the long-term statuses and positions that characterize states are most effective if they are objects that have the potential for being passed from one generation to the next. Goods of cloth and ceramics, of course, may be preserved, and there are examples of ritually important cloth and ceramic vessels being preserved for centuries. However, preservation of such objects is difficult and requires special care and treatment. Metals are less fragile, gold being almost permanent. Given all of these characteristics, metal objects have been widely adopted to symbolize and commemorate lasting relationships and achievements.

The Andean metal objects that are best known to us archaeologically are from the pre-Inka cultures of the Peruvian north coast. Most of the Inka materials in precious metals were melted down in the decades following the European invasion. An archaeological assessment of Inka metals will therefore always be difficult. In pre-Inka times the quantities of metal ornaments in the southern Andes were not nearly as great as those in the north. The Inka brought Chimú smiths to Cuzco, suggesting both the importance of the craft and the lack of sufficient specialists locally to supply a rapidly expanding state.

Descriptions of the Inka rulers and the ceremonies in which they participated show the importance of metals, particularly gold, although cloth, feathers, and precious stones were always part of the ensemble (Cieza 1959 [1553]:35–37; Garcilaso 1966 [1604]:244). Common among surviving Inka metal objects are the *tupu* pins, which were often made of silver and used to fasten women's garments. The counterpart adornment objects of Inka male elites were probably ear ornaments, although few have survived. The Spanish called men of high status *orejones*—big ears—a reference to the elongation of their ear lobes caused by using large ear ornaments. Those of the Inka ruler, at least, are said to have been made of gold (Cieza 1959 [1553]:36).

Although the main use of precious metals was related to status and prestige and was part of personal adornment, another major use was as religious offerings. Gold and silver figurines of animals and people were often buried. Some of the most spectacular examples of these buried offerings occurred on snow capped mountains in the southern Andes of Chile and Argentina (Beorchia N. 1987). It is interesting that the human figurines were clothed, so that the metal surface was largely covered.

The surfaces of many pre-Inka metal artifacts were richly decorated with repoussé designs. Often they were painted or inlaid with other materials, such as stone and feathers. In some cases, like that of Tiwanaku, a complex iconography related to religion and cosmology. Sociopolitical status was almost certainly the main content of the elaborate and well-known metallurgies of the Peruvian north coast

(Lechtman 1984:10–15). The lavish use of worked metal surfaces, the incorporation of paints and other brightly colored materials, and the scale of many of the artifacts made to adorn living and dead people can appropriately be called ostentatious.

Inka designs tended to be simpler. The heads of the pins of women's garments were flat ovoids with undecorated surfaces. The figurines representing animals and people were often complex technically. However, they usually represented a single figure in a direct and realistic way. The apparent iconographic and decorative complexity of earlier periods was much reduced. (See Roe, Chapter 2, on media displacement and public power, for an analogous example and explanation.)

Like other cultures with access to metals and metallurgical technologies, the Inka appreciated the malleability, durability, and reflective surfaces of metal. However, it was not the medium chosen for expressing their most complex ideas. It seems almost to have been a foreign medium to them, more admired than fully mastered. The vocabularies for articulating the principal social and ideological concerns were found in cloth and architecture.

TEXTILES

There can be no doubt that textiles were the prime medium for stylistic expression in the Andes. By 5,000 years ago, decorated textiles were being made. By Inka times cloth played a surprising number of social and political roles (Murra 1962), some of which were quite unusual. The social importance of fine textiles continues today in the Andes.

Unfortunately textiles are extremely fragile. Archaeological research on the Inka has emphasized the highlands where textiles are not preserved in the ground. Their limitation to the coast and dry caves, and the fact that most Inka examples to date are from tomb contexts, creates an almost unsurmountable bias.

The existing literature thus comes from the written record, brought together by Murra (1962) in his classic article and, from a slightly different perspective, by J. H. Rowe (1973). This is supplemented by design studies of pieces in museums (mainly J. H. Rowe 1973) and by technological analyses of Inka weaving (mainly A. P. Rowe 1978).

As clothing, Inka textiles were the most personal of artifacts. They carried most of the symbols that indicated group membership, age, and status, supplemented by objects of wood, shell, and especially metal. People were apparently required to wear the dress of their region so that they could be recognized at a glance. Andean textile technology had achieved incredible design versatility so that a great array of textures, patterns and colors were available. Strikingly bold statements and intricate detail could both be produced.

Exactly how much of the detail of social position was encoded into garments is uncertain. Drawings from the 17th century native Felipe Guamán Poma's elaborate letter to the Spanish king (Guaman Poma 1980 [1614]) imply that the information on the tunics of the rulers and some officials may have been considerable. John H. Rowe's (1973) study of the designs of tunics available in museums shows that they are indeed rather strictly standardized, but it is not yet possible to infer the meanings of the various designs. A. P. Rowe's (1978) technical studies show that the production of the tunics was also standardized.

The written record, museum pieces, and the published analyses also allow us to surmise the political use of textiles by the Inka state. Most important is the high degree to which access to valuable textiles was controlled. The finest textiles, called *qompi* (probably tapestry weave), were used exclusively by the ruler. Others might use them only if they came as a gift from the Inka (Murra 1962:721; J. H. Rowe 1973:239). These limits were enforced by state controls on exchange, production, and raw materials. Specifically, the critical material for fine Inka textiles was alpaca wool which, unlike cotton, took the dyes that are essential to brightly colored designs. Alpaca herds of more than 10 animals could be maintained only with state permission (J. H. Rowe 1973:239–240).

The political circumstances under which textiles were granted by the Inka were numerous. They included gifts to important local leaders on a variety of occasions (Murra 1962:720–722; Rowe 1973:240–241) and grants to the army. Large gifts of textiles from the conquering Inka usually accompanied incorporation into Tawantinsuyu. They both legitimized a transfer of power and initiated a series of reciprocal economic and political obligations. At the same time they also allowed the state to assign the members of newly conquered societies new status and positions, equipping them with the appropriate visible insignia.

State control of the production and distribution of textiles can also be inferred from one of our most important finds at Huánuco Pampa: a walled textile workshop containing 50 structures. This was the center's major production facility. A group of female weavers probably lived there on a full time basis (Morris 1974). Brewing was also carried out in the compound. The combination of these activities fits the *aqlla*—a group of female residents in certain Inka installations. In the case of Huánuco Pampa, these women appear to have formed one of the most important segments of the center's population. Thus, here is contextual evidence of large scale cloth production in a center directly built and maintained by the state. The state was investing its enormous supply of labor in the production of goods of special importance to economic and political growth. Although we cannot see the styles of the cloth produced in Huánuco Pampa, its context leaves no doubt about the state's ability to strictly control style.

CONCLUSION: STYLE, MEDIA, AND POWER

In a large, complex society that lacks true writing, visual signals and symbols assumed special and important roles. Whereas some of these features are particular to the Inka, others apply to early complex societies in general. Two points are especially relevant.

First, the stylistic universe of a society is carried by a variety of media. In an advanced complex society such as the Inka, there are several media, each with an elaborate supporting technology. In addition to the visual styles of the end products, there are also the choices represented in the way the end products were made or achieved—the technical styles of doing things. It is important for the archaeologist to consider these multiple media comparatively. Differences in their scale, rarity, visibility, durability, malleability, portability, and so forth, give the media different qualities and, thus, enable them to articulate in different ways with society and its members. Patterns of articulation of certain media grow up over time, giving them special significance in relation to certain social and cultural dimensions (see also Neitzel, Chapter 12).

In the Inka case, I have suggested special roles for architecture and planning in carrying the political and ideological code that the Inka rulers wished to promulgate. Metals were important in denoting status; their rarity and their reflective surfaces, which had become associated with the moon and sun deities, also made them important as offerings. Textiles were at the summit of stylistic importance. Their utility, portability, and enormous visual flexibility made them the most personal of style-bearing objects. They were also of such great political and economic importance that it is not a serious oversimplification to say that the state's potential to expand was proportional to the amount and quality of the cloth it could mobilize. Pottery, almost always preserved for the archaeologist, remains mainly a stylistic indicator of smaller groups and communities in Inka times. However, there was also a State Inka ceramic style, which is very useful in identifying the buildings and sites where the state fulfilled its hospitality obligations. The degree of synthesis of state and local pottery styles also appears to be a reliable indicator of certain relationships between the conquerors and the conquered. The state pottery style became simple, however, intended for quantity production and easy identification. More subtle and complex stylistic contents were transferred to other media.

The second point I would like to stress is the dynamic nature of style and the state's role in innovation and promulgation. On the one hand, the central authority structure of a state-level society

gives it enormous power to make selections of stylistic features and then to invest massive amounts of labor into their production or construction and distribution. The state weavers at Huánuco Pampa or the Chimú smiths brought *en masse* to Cuzco are examples. In stylistic terms, the essence of the state is that it can define, produce, and distribute the styles that symbolize sociopolitical units, whether ethnic units or units of rulers and ruled. We cannot overemphasize the power and importance of the various aspects of style in helping create, promote, and legitimize state authority. It is important to see stylistic attributes not just in terms of artistic innovation and repetition. They were also dynamic features of the sociopolitical process. Much of what we call style was at the very heart of power.

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Part V

Postscript

Chapter 14

Future Directions for Material Style Studies

CHRISTOPHER CARR AND JILL E. NEITZEL

In the course of this book, an integrated theoretical framework has been built for studying material style in a holistic, anthropological manner. The task of integrating diverse current approaches to style within one framework was begun by taking stock of many of the factors that can determine the content, diversity, origin, and transformation of a material style. Also, various theories that pertain to these different factors were reviewed. Two possibilities for integration at the level of high theory were explored using social-psychological and selectionist–historical perspectives. Together, these two perspectives give order to factors that determine material style at the levels of the individual, society, and the ecosystem. The concepts that are central to the ordering capabilities of these two frameworks include the self and its reactive and proactive components, the process of re-creation of the self, cultural and natural selection, the effects of cultural practices, the transmission of practices, the origins of novelty, and descent with modification.

Theoretical integration at the high- and middle-range levels was also explored by applying a hierarchical perspective to both the design of material culture and its causes. Different sets of causal factors were shown to comprise different phenomenological levels, ranging from the ecological to the depth-psychological. This means that the diverse current theories of style, which address different causal factors, are relevant to different phenomenological levels, and thus are often complementary rather than competing. It was also shown that causal factors at different phenomenological levels affect somewhat differing sets of attributes or classes of artifacts in given contexts. Both causal factors and resultant forms can be arranged hierarchically and these two hierarchies can be interrelated. A middle-range theory linking the two hierarchies was built, and then tested and illustrated with several media.

A final strategy used to construct an integrated, theoretical framework for studying material style was distinguishing causal factors by the nature of their roles in theoretical explanations. Distinctions were drawn between four kinds of factors that cause material style: (1) dynamic processes; (2) constraints or milieu that define, promote, or discourage processes; (3) unique triggering events that activate processes; and (4) regulating structures. Many examples of each of these four logical types of

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factors were enumerated (Carr and Neitzel, Chapter 1:Table 1-1) for each phenomenological level—from the ecosystemic through the depth-psychological. Significantly, the distinction of these four logical types of causal factors is the basis of differences among functional, historical, and structural kinds of explanations of material style. Thus, current theories of style were shown to be complementary in both the logical types and the phenomenological levels of the causal factors that they evoke. Theory-building efforts in this book were guided by the view that any integrated and holistic framework for studying material styles and offering explanations of them should embrace all logical types and phenomenological levels of causal factors.

The integrated framework that has been built here for analyzing and interpreting the design of material culture in a holistic manner rests on a view of the artisan as a whole human being. An artisan is many things (Figure 14-1). First, he or she is a conscious decision maker and social actor who balances both outer-worldly and inner experiences and constraints when producing an artifact. Outer-world considerations include ecological, technological, social, economic, political, and ideological factors. Inner experiences include feelings, thoughts, and mental images that derive from the personal, cultural collective, and universal collective levels of the unconscious or the response of these to outer-world conditions (see below). The balance that the artisan seeks among outer and inner experiences and constraints while meeting the needs of life and personal desires through his or her productions are found, in part, at the middling, social-psychological level of stylistic re-creation of the self (Voss and Young, Chapter 3) and the balancing of its social and personal dimensions (Wiessner 1984, 1989). Second, the artisan is also an unaware player who surrenders in his or her productive acts to ecosystemic and depth-psychological processes (e.g., natural selection, psychological archetypes) of a scale beyond his or her full comprehension (e.g., Rappaport 1968; Jung 1971). Finally, the artisan is a physiological being, with habits and motor skills that semiconsciously or unconsciously affect the form of his or her productions.

The design of material culture is the expression and projection of all these causal factors that artisans as human beings encompass and mediate. Different classes and attributes of artifacts may reflect differing sets of causal factors, but artifacts always reflect multiple factors of varying phenome-

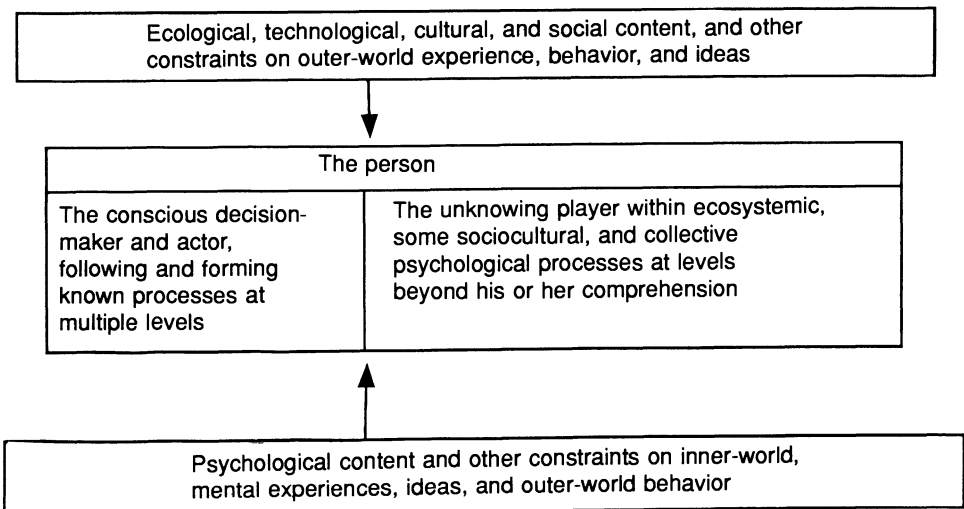


Figure 14-1. The processes and constraints that provide and limit the content and structure of material productions and styles of individuals, cultures, and culture areas occur at phenomenological levels both above and below the person.

nological levels and logical types. Thus, the main conclusion of this book is that material styles cannot be adequately explained from the limiting viewpoint of one paradigm.

To be a skilled analyst of material style, a researcher must be a *whole anthropologist* and then some. Interpretations of the design of material culture that are richer and more relevant to the artisan and his or her culture will be drawn as the analyst gains a greater understanding of:

1. The dynamics of many potentially causal factors (e.g., ecological, sociocultural, social-psychological, personal psychological, depth-psychological, physiological) and how these processes can influence material culture;
2. The primitive technologies, including crafting processes and raw materials, that structure manufacturing decision hierarchies and production sequences and thereby influence the level of artisan spontaneity, the kinds of messages (if any) that are expressed materially, and the attributes in which those messages are expressed;
3. The culture-historical contexts of the population(s) of artifacts being analyzed, including the local ecological, ideational, political, social organizational, social-psychological, emotional, motivational, and functional contexts within which artisans make choices;
4. The artifactual life-histories and other formation processes that filter archaeological data.

Only with such understandings can interpretations be derived from, rather than paradigmatically laid upon, stylistic data.

FUTURE DIRECTIONS

Taking a holistic perspective on the study of material style, five yet unresolved issues or problem domains now seem central to the future of building theory about style and applying theory. Each of these is discussed in the next five sections.

Perception

One issue that is central to future theory-building about style is how humans perceive and compare perceptions in the form of mental images. Washburn (Chapter 4) draws upon artificial intelligence literature and posits that human perceptions of external objects and their mental images are structural, being comprised of the relationships among their culturally deemed, significant features, rather than iconic pictures. Jungian depth psychology (Jung 1971) implies the same: archetypal primitives of the psyche are defined as “structures without content.” In contrast, a rapidly growing body of psychological (e.g., Kosslyn 1985) and medical (e.g., Ley 1983) literature holds that images of the psyche are iconic models whose formation is mediated by the right hemisphere of the brain, and that perceptions also are iconic in nature. Some depth-psychological studies (e.g., Grof 1985) also imply the iconic nature of mental images. These two contrasting views go beyond the simple question of whether the perception process is partitive-analytical and/or Gestalt in nature, which Pryor and Carr (Chapter 8) briefly consider.

A correct understanding of the perception process is essential to analyzing the design of artifacts. The unified middle-range theory presented in Chapter 7 assumes the iconic nature of mental images. For example, a relational attribute of an artifact is held to be less visible than an iconic attribute of a similar scale, all else being equal. Thus, if messages are expressed by both, one would expect theoretically that the message of greater importance would be expressed in the iconic feature while the message of lesser importance would be expressed in the relational attribute. If perception is, instead, most basically structural in nature, the relational attribute would be more visible and would be expected to express the more important message. In sum, the nature of perception assumed affects the order in which attributes are arranged in the visibility hierarchy and the specific mapping of messages to attributes.

Multi-Class Artifactual Systems

A second issue needing further study is how materially communicated messages of various priorities are distributed among artifact classes in multiclass artifactual systems, as opposed to among the attributes of one artifact class. The middle-range theory in Chapter 7 pertains to only attributes within one artifact class. The theory shows how the visibility, decision order, and production step of attributes of an artifact class each influences the messages of various priorities that are selected to be expressed through those attributes. However, a somewhat different set of characteristics probably influences which of multiple artifact classes or attributes of those classes are selected to express messages of various priorities. These characteristics probably include the absolute visibility, contextual visibility, rarity, durability, level of curation, malleability, and portability of the artifact classes (Morris Chapter 13). How these characteristics of artifact classes can be combined to predict which classes might tend to express more important messages has not been investigated.

Reconstructing Social Contexts

A third issue to be clarified in future studies of style is the feasibility, efficiency, and logical integrity of using stylistic data to reconstruct past social contexts, in contrast to other kinds of phenomena. Traditionally, stylistic data have been used to reconstruct two broad categories of phenomena. The first includes social groups of various scales and related phenomena such as the form and nature of boundaries between groups, the spatial overlapping of settlement systems, and the migration or stability of social groups within a locale. These phenomena are among the concerns of more traditional archaeology as culture history. The second category of phenomena include the large array of processes that define social groups or operate at scales coincident with them. Intergroup competition, intragroup cooperation, the passive sharing of a common history of interactions, patterns and frequencies of intergroup marriage and recruitment, and the unconscious expression of group-specific metaphors at the structural level are some examples (see Carr, Chapter 7: Table 7-2, for a longer list of processes). Such phenomena are the concerns of processual archaeology, which focuses on sociocultural dynamics.

Recently, Wiessner (1988) has suggested that stylistic data can be used to reconstruct a third category of phenomena: the conditions and pressures of past social contexts that influence the choices and actions of persons, including the uses of style. Examples include sacred versus profane contexts, public versus private contexts, and contexts of fear versus safety, affluence versus scarcity, intergroup versus interpersonal competition, and social cohesion versus social breakdown and acculturation (Wiessner 1988; Carr, Chapter 7; Rosenthal, Chapter 10). Such conditions affect the values, preferences, motives, and strategies of individuals and, in turn, the priority given to various messages for material stylistic expression—for example, the balance given to expressing personal versus social dimensions of the self. Wiessner (1984, 1988) illustrated with three ethnoarchaeological cases how stylistic data can express such a balance and, thus, imply certain social, contextual conditions. Conkey (1990) reiterated Wiessner's call for using stylistic data in this new way.

The use of style to reconstruct dimensions of past social contexts is certainly theoretically intriguing, but faces some hurdles. One is how to circumvent logical tautologies in the inferential process, in archaeological applications as opposed to ethnoarchaeological demonstrations. In ethnoarchaeological studies, the material attributes that reflect specific messages, such as personal versus social identity, can be observed directly. In contrast, in archaeological studies, they cannot. Selecting such relevant attributes requires one to know the approximate priority given to various messages that might be expressed materially, and this, in turn, is established through an assessment of the social context—the phenomenon to be reconstructed.

A second hurdle is the feasibility of using stylistic data to reconstruct social contexts, as distinct from their correlates. For example, Wiessner's (1984, 1988) ethnoarchaeological case studies have

shown how style can reflect the balance given to the expression of personal versus social identities that *respond* to contextual pressures and conditions. The case studies have not shown how style can reflect contextual pressures and conditions directly. It is not clear how stylistic forms (other than clear iconological images) might reflect, for example, sacred versus profane contexts, public versus private contexts, fear versus safety, and so forth. Thus, Wiessner's studies actually link styles to processes rather than contextual conditions.

A final issue with using stylistic data to reconstruct past contexts, either directly or indirectly through correlated processes, is its efficiency. Other kinds of archaeological data may be clearer or more direct indicators of past contexts. For example, situations of fear might be more easily and directly recognized by the location of settlements in hard-to-get places, the walling of settlements, and bioarchaeological data on warfare than by artifact styles and the balance of social versus personal identities that they express.

Selectionist Theory

The fourth and fifth problem domains that seem central to future theory building about style are selection processes and psychological processes. These belong to the highest and lowest phenomenological levels discussed in this book—the human ecosystem and society, and the unexpressible personal conscious level and unconscious levels of the psyche, respectively. Archaeological and ethnographic studies of style have largely overlooked causal factors at these two levels and have focused on factors at the more intermediate phenomenological levels of the operative society, intimate society, network of interacting artisans, and the ego. The remainder of this postscript explores some issues and potentials in studying material style relative to selection and psychological processes.

In the past 15 years, three authors have explored how neo-Darwinian evolutionary theory might be translated from the biological realm to the human behavioral realm to explain stability and change in material style through time. Dunnell (1978) briefly posed some critical concepts. Both Hill (1985) and Braun (Chapter 5) have considered, in detail, the possible analogies between biological and anthropological concepts, and have built theoretical frameworks from first principles. They also have assessed how the social interaction, information exchange, and/or social dialects theories of style are incomplete or misleading in their views.

Hill's and Braun's essays make several theoretical contributions in common that appear reasonable and durable at this time. First, they show that any complete, general framework for explaining stability or change in a material style must include at least seven basic concepts, which have analogs in biological evolutionary theory. These concepts are (1) the social group under consideration, as an analog to the "breeding population"; (2) the pool of alternative stylistic traits used by the social group, as an analog to the "gene pool"; (3) the frequency distribution of those traits, as an analog to "gene frequencies"; (4) innovation, as an analog to mutation; (5) transmission or diffusion of traits through interaction, as analogs to "gene flow"; and (6) selection—the mechanisms by which traits are selected or not selected; and (7) the adaptive advantages or effects of traits, as analogs to "selective advantage."

Second, both Hill and Braun, following Dunnell (1978:200), argue that interaction between populations and the diffusion of a stylistic trait are not sufficient to directionally increase the frequency of that trait and fix that trait in the material culture of the recipient population. Directional change and stability in the frequency of a stylistic trait depend on mechanisms of selection and the selective advantage of the trait. Third, and related, Hill and Braun pose that drift in the frequencies of a stylistic trait through time results from the trait being selectively neutral, from random events (e.g., how a social group fissions and how the frequency distribution of alternative traits is split among subgroups), and from stochastic, differential transmission of traits within small social groups.

Beyond these fundamentals, Hill's and Braun's essays part in three ways, which comprise issues for future theory-building. These differences are: (1) the appropriate time-scale for archaeological studies of style; (2) the relevance of the social interaction, information exchange, and social dialectics

theories of style to explaining long-term stylistic stability and change; and (3) the role of the human decision maker in long-term stylistic change and stability. In addition, Braun's essay differs from other literature on two related issues that require further consideration. These are: (4) the effects of small-group dynamics, including interaction and decision making, on long-term, regional stylistic practices; and (5) whether the search for cross-cultural regularities between material style and its causes is a fruitful course for theory-building. We will now explore each of these issues further, providing some perspectives that may help to guide future work on selectionist theory.

Time Scales and Relevant Theories

Braun thinks that short-term variation in material style and other social practices is largely irrelevant to archaeology. For him, archaeology's concerns lie in transgenerational changes or stability in material style. It is on this basis, in part, that Braun rejects the information exchange and social dialectics theories of style as useful in explaining stylistic change and stability, and favors selectionist theory. The information exchange and social dialectics theories see stylistic variation, change, and stability as emerging from human decision making, which is a short-term process that cannot, in Braun's view, orchestrate long-term stylistic trends. In contrast, according to Braun, selection processes are capable of producing transgenerational stylistic change or stability, and are therefore relevant to archaeology.

Hill, on the other hand, places no temporal limits on the concerns of archaeology or on the applicability of selectionist theory (see also Dunnell 1980:66). Selection, in Hill's view, is capable of producing either long-term or short-term change and stability in the frequencies of stylistic traits. Moreover, Hill defines cultural selection as human decision making. Thus, the information exchange and social dialectics theories, which evoke human decision making, are capable, in Hill's logic, of explaining short or long-term stylistic change and stability. They remain relevant to archaeology.

We think that Braun's view of archaeology as a discipline focused on long-term cultural change or stability seems overly narrow. There are numerous archaeological contexts in which short-term processes on the order of one or a few generations, including those pertaining to stylistic variation, can be traced and are worthy of investigation. Historical archaeology (Glassie 1975, Leone 1984), classical archaeology (Knight 1986), some of the tight, dendrochronologically controlled sequences of the American Southwest (Dean 1969; Plog 1986:87–113, 224–255; Crown 1991), and ethnoarchaeology in combination with ethnohistory (Wiessner 1989; Sampson 1988) are notable. The more fundamental issue of whether information exchange and social dialectical processes can produce transgenerational change or stability in the frequencies of stylistic traits is considered below.

Human Decision Making

In Braun's rendition of selectionist theory, human intention and decision making are placed along with innovation, interaction, and diffusion among the sources that produce variation or "novelty" in stylistic traits. Decision making and these other factors are seen as analogs to genetic mutation in biological evolutionary theory. Thus, decision making is not thought to be responsible for directional change or stability in the frequencies of stylistic traits. Directional change and stability result, instead, from cultural and natural mechanisms of selection, which, for Braun, include several processes other than decision making (see also Dunnell 1980:50,61). One process that is central to his framework is the nature and effects of stylistic and other social practices, themselves, relative to the nature and effects of other stylistic and social practices. The different effects of different practices inhibit, allow, or encourage their transmission and perpetuation, thereby shifting or stabilizing their popularity. In biological terms, selection, and the change or stability in the relative frequencies of stylistic traits, is attributable to the "selective advantages" of those traits.

In contrast, Hill (1985:377–378) equates human intention and decision making with cultural

selection instead of with the factors that generate variety. Moreover, decisions are made so as to meet adaptive needs, of either the social group or the individual; that is, to improve individual "fitness" in biological terms. Hill does not explicitly consider the effects of stylistic or other practices relative to each other in defining cultural selection.

Aspects of both Braun's and Hill's frameworks seem necessary to a full description of selection. It is certainly true that, as Braun posits, the concordance, discordance, or advantage of a stylistic trait or other social practice relative to other practices may encourage or discourage its transmission and perpetuation through time. And this may sometimes occur without the decisions and notice of social actors, through other cultural or natural selective mechanisms. For example, a rule about who may be taught a style—a social practice—may systematically stabilize or alter the frequencies of alternative style traits over the long run, without the notice of the social actors.¹

At the same time, some cultural selection processes do involve conscious choice as Hill posits. People choose between current and new practices, including stylistic ones. Choices are made in relation to personal and social preferences, intents, goals, strategies, beliefs, and/or constraints, including the short-term and/or long-term personal and social goals and projected costs that alternative choices imply. The actual effects of such choices may not be seen at the time of choice by the decision makers and may not be adaptively optimal, advantageous, or even satisfactory over the long run. Yet during that regime of decision making, which may be transgenerational in scale, the frequencies of stylistic traits will have changed directionally or stabilized in response to the choices made. Thus, it would seem that human decision making is more appropriately characterized as one of several mechanisms of selection, than as a source of novelty.

This viewpoint finds support and precedence in human evolutionary biology, where human decision making is both recognized theoretically and documented empirically as a mechanism of selection that causes directional change or stability in gene frequencies and phenotypes (Darwin 1901:738–780; Eckland 1971; Hulse 1971:293–294; Chagnon 1972:263–269; Mukherjee, Malhatra, Pakrasi, and Kate 1980). Here, choice is involved in preferential mating and sexual selection.

A philosophical perspective on logical types of causation (Carr and Neitzel, Chapter 1) also reveals the need for the concepts of social practices, their effects, and choice, from Braun's and Hill's frameworks, to explain transgenerational stylistic patterning. It may be recalled that a full explanation of a phenomenon considers both dynamic processes and the constraints or milieu that define, promote, or discourage processes. If a choice, such as a stylistic choice, is conceived of as a process, as it is in decision theory (Limp and Carr 1985), then other practices that encourage or discourage that choice through their actual or perceived effects can be thought of as constraints that define or guide that decision process in determining which options are more or less preferable or attainable. The choice process and the constraints under which a choice is made are logically distinct kinds of causal factors. Both are necessary to fully and logically describe how cultural "selection" as decision making occurs (see Limp and Carr 1985:132–138 for further explanation). In this way, too, Braun's and Hill's conceptions of cultural selection are complementary.

Braun's and Hill's frameworks are also complementary in the kinds of selective processes they consider. Hill defines cultural selection as synonymous with decision making. Braun notes that cultural selection also includes the unintentional perpetuation of existing practices that occurs when people preferentially associate with others with like practices. Further, Braun discusses natural as well as cultural mechanisms of selection and enumerates several kinds of natural selection, whereas Hill does not discuss natural selection. Theoretical consideration of all of these cultural and natural

¹Other examples of practices that may encourage or discourage the transmission and perpetuation of a stylistic trait without involving decision making include beliefs and world views. So, too, may the different levels of risk or buffering from risk that different styles facilitate, as in the telling case of the styles of Maring war shields (Lowman and Alland 1973:33). Also, the mechanisms of natural selection, such as the differential demographic growth and persistence of social groups, do not involve decision making.

processes seems essential to a complete framework for explaining stylistic change and stability (cf. Dunnell 1980:63).

In not taking this larger perspective, and specifically in arguing that decision making should be thought of as a process that generates novelty rather than a selection process, Braun's essay develops three logical problems. First, the argument implies that decision theory, and economic theory in general, address the origins of alternative options. This is not so. Decision theory and economic theory are concerned with the logic of choice processes *given* certain alternative options, resources, and constraints. (See Limp and Carr [1985] for a readable review of decision theory written for archaeologists.)

Second, Braun's argument that decision processes are not selection processes hinges on his false characterization of decision making. Braun equates choice with optimization. He then points out that not all social practices are optimal, so choice must be an inappropriate explanation of those practices that are selected and perpetuated over generations. However, whereas it is true that many social practices are suboptimal, it is not true that all choice processes are optimizing and therefore incapable of explaining the perpetuation of suboptimal practices, such as some stylistic practices. A choice is a selection of an option from one of a number of sets of alternative options after those sets have been ordered according to preference criteria. Selections may be realized anywhere on a continuum between maximizing, optimizing, or satisficing solutions. Moreover, preferred alternatives may or may not confer greater fitness and be "adaptive" in either the short or long run, depending on the choice model/process and the knowledge of the decision maker. This flexible and most general view of decision making is defined by set decision theory (Arrow 1951). Set decision theory is capable of generating a variety of decision models that range from maximizing to satisficing (Limp and Carr 1985:142–148). Thus, choice processes can lead to satisfactorily and/or adaptively suboptimal choices and perpetuate suboptimal social practices, including stylistic practices, through time. And decision theory can be used to model choice processes as cultural selection processes without implying optimization in the perpetuation of social practices. Thus, set decision theory can logically be subsumed under selectionist theory as a component of it. Selectionist theory is more encompassing in addressing both natural and cultural selection, and forms of cultural selection besides human decision making (see Braun, Chapter 5, for various kinds of natural and cultural selection).²

Braun's confounding of choice with optimization apparently stems from his equating all choice theory with one form of choice theory—the common but narrow view of Western formal economics, which focuses on maximizing and optimizing. Hill (1985:378) does not make this mistake when he characterizes cultural selection as decision making.

A third logical difficulty arises as Braun argues that decision making should be thought of as a novelty-generating process rather than as a selection process. This problem is the mischaracterization of the information exchange and social–dialectical theories of style. Braun holds that these theories address the origins of alternative stylistic options. Instead, they address the choices that artisans make among available options and the perceived, adaptive and strategic reasons for those choices.

All told, it would appear that decision making should be considered a form of cultural selection. However, decision making is not the only form of cultural selection, and selection includes both cultural and natural processes.

²The logical difficulties in Braun's argument, that decision processes are not selection processes, become apparent in his use of language. In discussing cultural selection, Braun slips back into the parlance of decision making. He does not maintain his stance that social practices do or do not perpetuate themselves relative to other practices according to their nature and effects. Thus, "Existing practices constitute an initial filter which affects the likelihood of *acceptance* of new practices" and "existing beliefs . . . may inhibit the kinds of innovations that *people* consider for potential adoption. . . ." Such statements suggest that, intuitively a fundamental part of selectionist theory is choice.

Small-Group Dynamics

Now let us turn to some differences between Braun's essay and other literature on stylistic change and stability. One issue that Braun's essay raises is the effects of small-group dynamics on long-term, regional, stylistic practices. Braun holds that short-term, small-group interaction and decision processes are not essential to either maintaining or changing regional, long-term social practices, including stylistic ones. Some disciplines offer theoretical viewpoints and empirical evidence to the contrary. Most poignant are the theories and empirical studies of symbolic interactionism, social psychology (Goffman 1959; Stone 1962; Lindesmith 1975), and related developments in other fields (Bauman 1972; Ben-Amos 1972), which are summarized by Voss and Young (Chapter 3). Specifically, individual performance, and feedback on the competence of an individual's performance, within small groups are held in these disciplines to be the means by which traditional and standardized social practices at broader social scales are maintained. In the same way, it can be argued that change and maintenance in regional material styles depend on interaction between the individual and one's operative society as social and personal aspects of the self are evaluated relative to other's reactions and cultivated over ongoing cycles of interaction, negotiation, and recreation of the self stylistically (Voss and Young, Chapter 3). Hodder (1990:46) implicitly embraces this view when he defines style as "the referral of the individual event to a general class" or "way of doing." Various empirical studies support this understanding of regional styles.³

It is also important to remember that both the proactive (impression managing) and reactive (self-evaluating) interactive aspects of re-creating self-image are more important in non-Western societies than one would anticipate from the individualist-oriented Western perspective (Carrithers, Collins, and Lukes 1985; Voss and Young, Chapter 3). In non-Western societies, individuals and groups define themselves more fully in interactionist terms. Thus, Western personal experiences provide a culture-bound and biased basis for understanding more generally the role that small-group interactions play in producing long-term stability or change in cultural practices.

Beyond the process of re-creation of the self, there are other kinds of processes of interaction between the individual or small group and larger society that can be important to the generation of transgenerational, society-wide stylistic patterns. Some of these have been discussed in this book. First, a "great individual," a "visionary patron," or a small but elite social group can alter the context of production and use of an artifact class throughout a society, thereby setting in motion a change in its style or variability (Roe, Chapter 2; Rosenthal, Chapter 10).⁴

A second kind of interaction process that may lead to transgenerational, society-wide changes in style involves Roe's (Chapter 2) concept of "realms of protected deviation." Within a society, there may exist smaller segments within which stylistic innovation beyond traditional lines is accepted. Within these locally permissive contexts of production, new styles may crystallize and gain momentum. From these contexts, the new styles may then spread and be more readily approved throughout a society, whereas they might not if initiated in the larger, more traditional society by one or a few individuals.

³Voss and Young (Chapter 3) discuss how individual performance in small groups maintains regional traditions for styles of Nuba body designs and styles of Euroamerican folklore, literature, and music. Pryor and Carr (Chapter 8) discuss the importance of power relations within traditional Pomo families in maintaining or legitimizing change in regional Pomo basket styles.

⁴An example of the contextual and stylistic changes brought about by a great individual is found in the rise of the Handsome Lake religion among the Iroquois. In this case, medicine societies and their masks were disapproved of by Handsome Lake, which led to changes in mask styles and a reduction in stylistic variation (Rosenthal, Chapter 10). A second example is the "visionary patron" (e.g., the king, church elite, entrepreneur) who sponsors public projects that crystallize or shift the art style of a time. This process is commonly evoked in art history to explain long-term trends in Western art (Fleming 1968:v).

Roe (Chapter 2) and Rosenthal (Chapter 10) provide examples of this process.⁵ Thus, small, protected groups of special kinds, like great individuals, can play a significant role in determining the transmission and selection of style, leading to transgenerational trends. Individuals and small groups need not be simply the producers of novelty that Braun envisions.

In terms distinguished above, a realm of protected deviation within the larger society constitutes a "social milieu" or a "constraint" that defines and encourages small-group interaction and decision "processes." Again, both the constraint and the process must be evoked to fully describe cultural selection.

A final perspective that suggests that small group interactions with larger society and short-term decision processes are essential to regional, long-term stability or change in stylistic or other social practices is systems theory. Systems theory (e.g., Madore and Freedman 1987) predicts, and empirical studies of many kinds of systems, including human society, show that localized change and the interaction of local and global structures can create global patterns of change and new global structures. Global, directional change can crystallize in chaotic or dynamically stable systems as a result of such interaction effects. The initial, local conditions of change may be intentional, but the resulting global structure need not be intended or optimal for system survival (e.g., Flannery 1968).

In sum, multiple viewpoints suggest that small group interactions and decision processes, the constraining contexts in which they occur, and interactions between individuals or small groups and larger society, each can be essential in maintaining and altering regional, transgenerational stylistic patterns. Put in selectionist terms, much of cultural selection occurs within the context of small face-to-face groups. In this light, the information exchange and social dialectics theories of style, which evoke these processes, remain relevant to archaeological inquiry. At the same time, regional selective processes and constraints of the kinds Braun enumerates can also operate and contribute to the formation of transgenerational stylistic trends.

Cross-Cultural Regularities

A last issue that Braun's essay raises is whether the search for cross-cultural regularities between material style and its causes is a fruitful course for theory-building. For Braun, the answer is no. Specifically, Braun argues that selectionist theory is appropriate for explaining transgenerational stylistic change or stability because it focuses on historically unique sequences of circumstances (i.e., "descent with modification"). In contrast, Braun finds the information exchange theory wanting because (1) it poses cross-cultural regularities that assume optimal decision making; (2) the regularities are held to be universal and, thus, the theory is deterministic; and (3) the theory does not recognize historically unique circumstances. For example, the theory predicts that, universally, different kinds of social information about groups of different size will be encoded in artifacts of differing visibility (Wobst 1977).

Braun's remarks are both insightful and problematic. Braun is right that, as originally presented by Wobst (1977), the information exchange theory offered a set of cross-culturally universal, deterministic predictions about form–process relationships. Being universal, these predictions inappropriately implied human decision making to be optimizing—the assumption of the adaptational paradigm of the time.

However, in exploring style as communication, it is possible to move forward from the manner in which information exchange and decision making were originally conceived by Wobst and to integrate more current understandings of decision making. If the nature of decision processes is relaxed to include satisficing as well as optimizing decisions, as in set decision theory, then the information

⁵The Seneca Arts Project (Rosenthal, Chapter 10) is an example of a realm of protected deviation that fostered long-term stylistic changes. Children's pots that were wildly decorated by Cashinahua mothers (Roe, Chapter 2) may also pertain.

exchange theory and the stylistic decision processes it evokes do not deterministically predict universal form–process relationships. The predictions become only cross-cultural tendencies of some undetermined strength and, in this way, are on a par with Braun's characterization of selectionist explanations of style. Thus, it does not appear necessary to discard the information exchange theory and the predictions about form–process relationships that it makes. Rather, it is only necessary to modify the form of decision theory upon which the information exchange theory is based. In this light, the search for cross-cultural regularities in form–process relationships that are statistical generalities of variable strength becomes an acceptable approach to theory-building.

From this standpoint, Braun's offering of selectionist theory in lieu of any theories that posit universal, cross-cultural regularities is a troublesome swing to the opposite pole. Selectionist theory, with its focus on historically unique sequences of circumstances and serendipity, does not adequately explain why cross-cultural relationships between stylistic forms and their causes do occur at noticeable and statistical levels (see Carr, Chapter 7, for documentation).

All told, some wedding between theory that posits cross-cultural regularities in form–process relationships and theory that recognizes historicity and context seems in order. One possible line for future theory building is the integration of set decision theory within selectionist theory, as discussed above. Voss and Young's (Chapter 3) and Wiessner's (1984) social-psychological frameworks, which encompass the information exchange and social dialectics approaches and which can be translated at least partially into decision theoretic terms, should also probably be a part of such integration. A second avenue for integration is the unified middle-range theory presented in Chapter 7.⁶

In sum, selectionist theory has an important role to play in explaining transgenerational stylistic change and stability, but is not the only relevant theory. Set decision theory, the information exchange and social dialectics theories, and social-psychological theory about the re-creation of roles and the self, are also pertinent. There are many empirical and theoretical reasons for not removing the unique person, the actor, decision making, small-group dynamics, and interactions between the individual, small groups, and society from theory about transgenerational stylistic patterning. Also, from a more philosophical stance, one must ask the relevance of any paradigmatic approach to style that excludes, as Braun's formulation does, two of the very things we wish to understand as participants in the human condition: ourselves and our constituent selves.

The Unconscious Psyche

A final area that seems essential to explore in future building of style theory is the nature of the unconscious mind, including its content, structure, and dynamics. This is so because the most basic elements of the psyche are preverbal images, which can serve as both a source of and a constraint upon the conscious images that an artisan renders in form in material culture (e.g., Jung 1964; Kosslyn 1985). To fully understand a style, its origin, its content, its meaning, its uses, and its change or stability through time and space, one must consider not only the outer-world ecological, technologi-

⁶The unified, middle-range theory envisions the relationship between material forms and causal processes as the product of both universal and unique factors. For example, the relationship between the visibility of an attribute and the size of the social group reflected by the attribute is in part the product of universal factors such as local ecosystemic regulation and growth processes (Slobodkin and Rapoport 1974), natural and cultural selection, the social-psychological process of role and self re-creation, and the physical-perceptual constraints of viewing distance and attribute visibility. At the same time, the relationship also reflects unique factors such as local or short-term stresses and cultural values, local prosperity and risk levels, the social situations of artifact use and display, and the history of group contacts. These universal and particular factors affect the priorities that are given to various kinds of messages and the visibility of their stylistic expression. Thus, the relationship between form and process has a uniqueness in each given instance but is also constrained in its permutations, creating cross-cultural regularities that are statistical rather than deterministic.

cal, cultural, and social factors that impinge upon artisans, but also the general nature of their inner-world experiences. The artisan, as all humans, stands in the portal between the outer and the inner, and participates in and responds to both, with more or less knowing (Figure 14-1).

Unlike art historians and critics, contemporary archaeologists have seldom considered the psychological factors that determine styles. There are several clear reasons, which have little to do with the relevance or potential productivity of psychological studies. First, in the United States, the New Archaeology accepted Redfield's notion of the primitive who is bound by custom, rather than Boas's view of the native who plays with techniques and tradition during the crafting process—play being a vehicle for the emergence of unconscious content. Redfield taught at the University of Chicago, where the New Archaeology crystallized (Lathrap 1983:26–27). Second, the New Archaeology (Binford 1962:219) drew upon White's (1969) polemical view of culture as deriving from culture rather than psychology. Third, the New Archaeology crystallized around a behavioral, materialist, ecological, functionalist agenda in reaction to the ideational bent of normative archaeology and, specifically, the concept of “mental templates” of artifact forms (Binford 1965). Fourth, in Britain, Hodder's (1982b: 8–11) recent structural–dialectical approach to symbols and style has been built within the bounds of traditional British anthropological interests in social structure. The use of symbols in mediating social relations and the histories of meanings of symbols, rather than their psychological determinants, has been his focus. Fifth, few archaeologists are trained in art or primitive technologies and understand internal aspects of the material creative process. Sixth, few archaeologists are trained in depth psychology, the study of the unconscious. Seventh, a complete anthropological foundation for studying the psychological determinants of style, from which archaeologists might draw ideas, has been lacking. Anthropological approaches to the unconscious have been dominated by cognitive, structural–linguistic models of the mind (Chomsky 1963, 1968; Lévi-Strauss 1963:31–54, 208) and have not explored the potential of the imagery-based models of recent depth psychologies. In archaeology, this has led to the development of grammatical approaches to style, which have successfully studied the structures of styles (see Carr, Chapter 7 for a summary), but not the workings of the unconscious through styles (Muller 1979:182–183). Finally, comparative cross-cultural studies of the content of world views, beliefs, and myths, which can reveal contents of the unconscious, are uncommon in anthropology (Kearney 1975, 1984) or not well accepted within it (e.g., Campbell 1968).

A systematic basis from which archaeologists might explore how stylistic patterning results in part from the unconscious has begun to crystallize over the last decade in certain disciplines outside of anthropology. The developing disciplines of depth psychology, process-oriented psychology, transpersonal psychology, imagery within medicine, and art therapy have sketched a rough map of the structure of the unconscious psyche, described some of its content and processes, and related these to conscious psychological, physiological, and behavioral phenomena (e.g., Jung 1964a; Edwards 1979; Simonton, Matthews-Simonton, and Creighton 1980; Kalff 1981; Mindell 1982; Weinrib 1983; Achterberg 1985; Grof 1985; Pert 1986; Winkleman 1986). Many of these advances are based on Jung's (1964b) seminal works on the structure and dynamics of the unconscious. They bring forward Jung's Western-biased interpretations of the meanings of images to various degrees.

The remainder of this section considers three topics. First, we briefly outline some fundamental, current understandings of the unconscious that seem useful to the archaeological study of style. Second, we consider the role of psychological explanations in understanding material style. Finally, we enumerate some potentially productive topics for future investigation.

The Nature of the Unconscious Psyche

The unconscious psyche is an organized matrix of images that are associated with emotional energies and, sometimes, sensate information. The psyche is not the unstructured receptacle of simply unneeded, painful, or unimportant information that Freud once posited (Jung 1964a).

The unconscious psyche appears to have at least three “levels,” which vary in how easily they are accessed by the (conscious) ego. The deepest and least accessible level of the unconscious appears to be the universal collective unconscious. It is comprised of the universal archetypes: innate, ideal forms/structures that lack specific content and that are shared in the minds of all humans. The innate and ideal nature of these images was posited by Jung (1971) to be the product of the repeated experience and cognitive abstraction of fundamental, outer-world physical and social phenomena or inner, physiological events by humanity at large over the millennia. Examples of such outer-world phenomena include night and day and other binary oppositions, cycles, our shadows or reflections in water, birthing, dying, mother figures, disciplinarian figures, and heros. Examples of inner, physiological events include breathing, the heartbeat, physical healing, and neurophysiologically based visions of consistent forms that are triggered by hallucinogens and other means (Reichel-Domatoff 1987:14–18; Lewis-Williams and Dowson 1988).

At an intermediary level in the unconscious psyche appears to exist the cultural or culture areal-specific collective unconscious. It is comprised of the mythological figures, landscapes, designs, other images, themes, and events that are shared by persons of a culture or culture area and that may be expressed in their art, lore, song, dance, settlement patterns, kinship and gender relations, and so on. Such “mythic archetypes” of the cultural collective unconscious were posited by Jung (1960) to be innate to the minds of peoples of a region through time. The mythic archetypes and their innate nature might have several sources. Like the universal archetypes, they might result from the repeated experience and cognitive abstraction of basic outer-world, physical and social phenomena particular to a region through the generations. They might also result from the repeated filling in of the universal archetypes with the same regional-specific, physical, social, and cultural content over time. In addition, some mythic archetypes might be the product of the repeated telling of and learning about paranormal experiences, as Hallowell (1940) documents, or the repeated sharing of logical speculations about the nonordinary (Malinowski 1922:237–254). The cultural collective unconscious is the level of the unconscious explored frequently by Lévi-Strauss (e.g., 1960, 1964) to reveal relational archetypes of the universal collective unconscious.

The level of the psyche that appears to be closest to the conscious ego is the personal unconscious. It includes the memories of all conscious experiences that an individual has had and has subsequently forgotten or repressed. It also includes the memories of subliminal perceptions and experiences that the individual did not initially register consciously, but that may later be accessed by the conscious mind.

The unconscious psyche has its own dynamics and goals—a “life,” so to speak, that is semi-independent of, yet coordinated with the ego of the conscious mind and with outer circumstances. Well-known examples of the semi-independent workings of the personal unconscious include Freudian slips, some contents of dreams, and psychologically based symbolic ailments of the body (Jung 1971; Mindell 1982). More controversial and less well-documented are the semi-independent workings of the cultural collective unconscious and universal collective unconscious. Their workings are said to be evidenced by the upwelling of similar mythic figures and themes possibly independently and simultaneously in several cultures (Johnson 1974, 1983; see below) and by simultaneous, independent inventions.

The workings of the personal and cultural collective unconscious within dreams and myths often compensates for or mirrors daily, personal or longer-term social activity in the outer world so as to bring a psychological balance to the greater, whole self or society (Jung 1964a). Dreams are known to both lag behind and lead their corresponding outer-world personal events, and the same is said to be true for myths relative to external social events (Jung 1964a; Johnson 1974:7).

The contents of the universal collective unconscious, the cultural collective unconscious, and the personal unconscious become manifested in the physical world through the psychological process called “projection.” In projection, human perceptions of and responses to the outer world are organized and molded, unknowingly to the person, by universal archetypal forms, mythological

forms, or repressed or sublimated personal material. Projection is thus a constraining process that limits both the creation and re-creative viewing of artifacts and their styles. At the same time, projections serve as grist during the creative and crafting processes.

Archetypes of the universal collective unconscious are never projected or experienced directly, being contentless blueprints of sorts. Instead, their form is filled in and projected through the mythological or personal images of the cultural collective unconscious or personal unconscious, which include images of outer-world phenomena.

Table 14-1 lists some cross-culturally common archetypes that are projected onto the material world stylistically by cultures in their own specific ways. The list extends well beyond the archetypes originally described by Jung, which are also tabulated here. Note that a universal archetype can be any of several kinds: an entity, an event/experience, or relations among these.

Although the universal archetypes are panhuman, they apparently are not projected continuously over time or even at each encounter with an entity, event, or relationship upon which they might be projected. Likewise, mythic images and personal content of the unconscious are apparently not projected continuously or with each potential encounter. These circumstances point to the semi-independent workings of the unconscious, as discussed above.

Mythic and universal archetypes can affect material style not only through their content and

Table 14-1. Some Common Archetypes^a

<i>Relational archetypes</i>	
Binary opposition	Lévi-Strauss (1964)
Triadic dualism	Roe (Chapter 2, 1988)
Dual triadic dualism	Roe (Chapter 2, 1988)
The part-whole relationship found in figure-ground reversal	Roe (Chapter 2)
Chromatism	Roe (Chapter 2)
<i>Entities, events, experiences</i>	
Death as symbolized in basic colors, sounds, bodily metaphors, and other images	Grof and Grof (1980) Huntington and Metcalf (1979: 44-57, 93-118, 153-172) Moody (1975) Evans-Wentz (1960) Carr (1993:87-93)
Self-integration, centering, transformation, and healing as symbolized in mandala-like images	Arguelles and Arguelles (1974) Harner (1980:34-40) Jung (1972)
Values and psychological states encoded in primal shapes	Arrien (1987)
The shamanic "magical flight" to the Upper World(s) as symbolized by mountains, pillars, ladders, and birds; and to the Lower World(s) as symbolized by bridges, rivers	Eliade (1964)
The stages of hallucinogenically induced trance and their associated sensory-emotional experiences as represented by their visual components	Lewis-Williams and Dowson (1988:203-204, 211)
Various shamanic experiences such as death, rebirth, healing, and divination, as symbolized and accessed by specific body postures	Goodman (1991)
Different basic forms of social relationship and experience which are distinguished by body symbolism	Douglas (1982)
The hero	Campbell (1968)
The anima (inner female), animus (inner male), great mother, wise old man, shadow, trickster	Jung (1964b); von Franz (1964)
Other personages	Grof (1985)

^aThese archetypes are found cross-culturally in both iconographic and nonrepresentational, symbolic art styles.

structure, but also through the emotional and/or kinesthetic energies with which they are loaded. These energies are ones associated with the phenomena that the archetypes represent (e.g., fear of death, release at birth), but compounded through the repeated human experience of those phenomena. Such energies have tremendous creative and destructive potentials, which many artists feel and harness as they work.

The Role of Psychological Explanations of Material Style

Psychological explanations of the content, origin, or spatial–temporal patterning of a material style are complementary to, and do not preclude or contradict, ecological, social, technological, functional, or other kinds of explanatory models of it. Either unconscious psychological or outer-world factors or, more typically, both may play a role in creating, constraining, and distributing a material style.

This complementarity is clear from the nature of the unconscious psyche, itself. First, images of the personal, cultural collective, and universal collective levels of the unconscious are manifested materially by projection onto not a blank material world but, instead, a material world that already has its own formal, social, and other characteristics and a history of these. Projection goes hand-in-hand with sensing, such that inner and outer worlds are combined in the perception process. Second, mythic archetypes may derive from the filling in of universal archetypes with regional-specific, outer-world content. Third, the content and messages of the unconscious that are expressed in dreams, myths, the arts, and other media coordinate with and/or compensate for outer-worldly conditions. Fourth, the universal archetypes, mythic archetypes, and personal content of the psyche may be projected and constrain the creative and re-creative viewing process only discontinuously.

In all, the relation of the unconscious psyche to the conscious psyche and the outer world, including stylistic forms and behavior, is perhaps best characterized as a dynamic feedback process. Novel images arise from, and constraining, selective forces operate within, both the inner and outer worlds. Both the production of an artifact by an artisan and the re-creative viewing of it by an observer may involve a negotiation between these two worlds (see also Roe, Chapter 2). Rosenthal (Chapter 10) documents this negotiation in the dreaming and carving of Iroquois medicine masks. Pryor and Carr (Chapter 8) hint at this negotiation in the dreaming and making of healing baskets by the Pomo Indian, Mabel McKay. In this way, different explanations of a style that draw upon psychological versus out-world causal factors can be complementary.⁷

Topics for Future Archaeological Investigation

Given the nature of the unconscious psyche outlined above, a number of topics seem fruitful for the future archaeological study of the unconscious expressed in material culture. The first is simply

⁷Rosenthal's chapter is especially instructive in showing how creating an artifact involves dynamic feedback between the unconscious, conscious, and sociocultural realms. It illustrates the complementarity of explanations that evoke psychological versus social or other outer-world factors to understand a style. In depth-psychological terms, Rosenthal's chapter shows that an artisan, through participating in his or her culture, unconsciously internalizes within his or her personal unconscious prototypical, model forms of artifacts that reflect external sociocultural, material, and other constraints. During the inspiration of an artifact (e.g., through dreaming), images that emerge from the mythic or personal unconscious are apparently filtered and given image form in part through the internalized prototype. This filtering process continues at a more conscious level during the recollection of the image while planning and producing the artifact. The finished artifact is an externalization of this mental adjustment process. In turn, the produced artifact may shift the diversity of extant artifacts of its kind and, thus, the prototypical category, bringing that category into more or less alignment with the internal, mythic archetypal image in the cultural unconscious to which it corresponds. Thus, artifact production can be a feedback process in which inner psychological and outer sociocultural realities are mutually adjusted. A full explanation of a style will usually involve psychological as well as outer-world phenomena.

descriptive: identifying examples of universal and mythic archetypes in material forms and coming to understand any regularities in their expression. Some examples include Roe's (Chapter 2) study of dual triadic dualism in male-female split representations of mythological personages in Chavin art; Lévi-Strauss's (1963:245-268) similar study of split representations in Asian and Northwest Coast American Indian art; Roe's (Chapter 2) study of animistic themes that pervade South Amerindian cultures; Rosenthal's (Chapter 10) study of mythological themes in Iroquoisan False Face medicine masks; Austin, Lujan, and Sugiyama's (1991) analysis of the Feathered Serpent Pyramid at Teotihuacan as a monument to the creation of calendrical time; Child's (1991) analysis of iron smelting furnaces among Bantu Africans as representations of the female; and Hodder's (1982a) exploration of Nuba world view themes of male and female, pure and impure. This first endeavor will require archaeologists to learn more about world views and mythologies.

A second topic for inquiry is the initial cause of the regional distribution of world view and mythological themes in the material culture of a large culture area or ideational "interaction sphere." Such a distribution might be attributed to cultural processes: elite exchange, down-the-line exchange, long-distance trade partnerships, the long-distance traveling of shamans or other marginal persons, or "diffusion" more generally. At the same time, one can also ask whether the distribution reflects a nearly simultaneous upwelling of the universal or mythic collective unconscious in the minds of many over the region (Johnson 1974:7, 1983:xiii). Interaction spheres that would be good candidates for being explained in this way, in contrast or in addition to being explained as the product of exchange or diffusion processes, are those spheres that (1) are defined by mythic or collective archetypal symbolic or iconographic forms; (2) were of great regional scale; (3) spanned many cultural traditions; and (4) appeared quickly. The Hopewell interaction sphere is one possible example. It is defined in part by its archetypal shamanic imagery in several media (Brose, Brown, and Penny 1985; Penney 1983) and spans several cultural traditions in the midwestern United States. In general, exploring the cause of regional distributions of archetypal imagery seems best suited to historic archaeology, where fine-grained chronologies and historical documentation provide the clearest means for distinguishing psychological from cultural processes.

A third topic for investigation is the cause of long-term stability of regional mythological themes in material culture in the face of acculturation or other milieux of great demographic and social change. Such stability may be better explained by psychological than outer-world phenomena. Examples include the stable mythology of the 17th through 19th century Indians of the southeastern United States during their acculturation (Hudson 1976) and the stability of some Hopi ceremonies and ceremonial paraphernalia from the 12th century to at least 1940 during acculturation (McGregor 1943).

A fourth topic for study is the relationship between the stylistic diversity of an artifact class and sources of creative inspiration. The creative inspirations of an artist can originate from (1) the current situation, including the cultural and ecological milieux, as experienced by the conscious mind; (2) the personal unconscious, directly; (3) the mythic, collective unconscious filtered through the personal unconscious; (4) the mythic, collective unconscious, directly; and/or (5) the universal collective unconscious as filtered through the mythic or personal unconscious. It is reasonable to suspect that forms derived by inspiration from deeper sources, later in this sequence of five sources, would be inherently less diverse synchronically and, perhaps, more stable over time than forms derived by inspiration from more surficial sources, holding other contextual conditions equal. This possible patterning seems important in two ways. First, the pattern might be used as a means for isolating stylistic variability deriving from the different sources. Second, in turn, knowing the sources of inspiration of artifact forms seems essential to evaluating the relevance of measures of stylistic diversity or homogeneity for reconstructing social interaction or communication, alone. This follows from Plog's (1978) critique of the multiple, extraneous factors that can affect diversity measures of interaction or communication.

A final area for study is the relationship between altered states of consciousness, creativity, and

stylistic diversity. Creative inspirations are one means by which stylistic diversity increases in material culture. Creative inspirations arise in normal waking states, yet more freely in altered states of consciousness when the conscious and unconscious psyche are more integrated. Some common altered states in which creative inspirations from the unconscious arise include (1) dreaming (Pryor and Carr, Chapter 8; Rosenthal, Chapter 10); (2) trance states produced by physical and/or chemical means; (3) trance states produced by repetitive crafting tasks, such as spinning thread, weaving fabrics or baskets, needlework, or throwing pottery on a wheel; and (4) more generally, any kind of close work that requires a dual, focused yet holistic attention, such as painting, drawing, or stone knapping (Edwards 1979:2–6). Craft-induced trance states apparently do not differ in their ultimate neurophysiological basis from either dreaming or physico-chemically induced trance states (Winkleman 1986).

The intimate relationship between crafting, altered states of consciousness, creativity, and stylistic diversity raises three questions that should be addressed when interpreting differences in stylistic diversity between media, societies, or times. First, can differences among media in their stylistic diversity be attributed to differences in their predisposition to inducing trance states? It may be that more repetitive crafting tasks are more so predisposed, but this requires study.

Second, can differences among societies or times in the stylistic diversity of one artifact class be attributed to the different degrees to which those societies or times accepted dreams or physico-chemically induced altered states of consciousness as legitimate sources of creative inspiration. For example, among the traditional Iroquois, dreams and visions were thought to be irrevocable and were supposed to be acted out immediately. A dreamed False Face mask was supposed to be carved accurately and without delay (Rosenthal, Chapter 10). This ethic resulted in greater stylistic diversity of religious masks among the Iroquois than among other cultures not having such a strong emphasis on manifesting dreams materially (Rosenthal, personal communication), such as the masks of the West African Poro secret medicine societies (Lommel 1981) and the Sande women's initiation society (Wingert 1962).

A third question is: Within a society, were trance states of different origins (e.g., dreaming, vision questing, chemical induction, crafting) accepted variably as legitimate sources of creative stylistic inspiration? If they were, and if trance states of different origin were associated with different behavioral contexts or media, then stylistic diversity might vary between contexts or media. Again, many factors beyond the cultural processes of interaction affect stylistic diversity (Plog 1978). For example, among the Pomo, certain normally tabooed sacred subjects could be woven into a basket's designs if they were seen in the dream of a healer and if the basket was to be used in a healing ritual. Inspiration by dreaming, as well as the power of the healer, made this practice acceptable. The tabooed subjects did not occur on utilitarian baskets used in domestic and other profane contexts, or on other media not used in healing.⁸

In sum, understanding the nature of the unconscious psyche and how it comes to be expressed in material creations is essential to a complete explanation of the origin, content, distribution, diversity,

⁸Variation in the stylistic content and diversity of different media as a result of the legitimacy of creative inspirations that an artisan has while producing them is one cause of what Roe (Chapter 2) terms the "semantic weighting of media." That is, different media may carry meaning to different degrees within a culture. Dreamed Pomo healing baskets are an example of a semantically weighted medium.

Also, media or contexts in which creative material expressions are deemed more legitimate as a result of their association with a given kind of altered state of consciousness are examples of Roe's (Chapter 2) concept of "realms of protected deviation." In such domains, creations of unconscious origin and consciously initiated play may be protected from criticism and cultural selection, gain popularity, and spread more easily to other media or contexts, thereby increasing stylistic diversity. Dreamed Pomo healing baskets, as a category, are a case of a "realm of protected deviation."

meaning, and use of at least some material styles. This is so because imagery of the unconscious is both the source of and a constraint upon the conscious images that an artisan renders into material forms. In this manner, the unconscious psyche does not differ from outer-world ecological, technological, social, or other factors that determine material styles. Also, an understanding of the unconscious may be essential even in more focused, everyday archaeological concerns about social interaction and communication, if stylistic diversity measures are to be appropriately interpreted. In all of the topics sketched above for future archaeological study, the development of middle-range theory that clearly links the nature and dynamics of the unconscious to material expressions of it is needed (Cowgill 1993).

CONCLUSION

The directions that studies of style in archaeology take in the future will depend not only on the theories of social groups and culture that archaeologists assume (Conkey 1990:12). Future directions will, to a considerable degree, also depend more basically on what archaeologists explicitly or implicitly think the artisan, as a human being, and the human condition to be. Is the artisan simply an individual from whom novel trial and errors in material culture blindly pour forth—that novelty then being subject to natural and cultural selective forces and to the serendipity of history beyond his or her control (Braun, Chapter 5)? Is the artisan a producer of artifacts that only mirror cultural codes and justify social strategies (e.g., Hodder 1982b)? Is the artisan only a social actor? Or is the artisan a conscious decision maker who responds to a much wider range of psychological, social, economic, political, and ideational needs and desires (Hill 1985)? Is the artisan a conscious ego who is unaware of depth-psychological processes that, in part, mold his or her creative forms and actions? Or is the artisan one who seeks out the unconscious through dreams or other means, bringing it into the light of his or her awareness for creative, curative, or social purposes?

Archaeologists need not be single-mindedly paradigmatic in answering these questions and in defining any one future course for the study of material style. A multivocal yet integrated approach is appropriate, for at least three reasons. First, as we have attempted to show in this book, material styles can reflect a broad range of causal factors, from ecological, technological, and social to social-psychological, personal psychological, and depth-psychological. These factors pertain to different phenomenological levels. Being arranged hierarchically, these factors, the theories that address them, the aspects of the artisan that are subject to them, and the aspects of a material style that express them are complementary. Second, societies vary in their concepts of the self and allowance of self-interest (e.g., Carrithers et al. 1985; Hsu 1985; Voss and Young, Chapter 3) and, thus, in the latitude given to the artisan as a decision maker, strategist, and channel to the unconscious (Roe, Chapter 2). Different assumptions about the artisan and the workings of style are appropriate in studying the material culture of different societies. Third and similarly, the latitude given the artisan, as well as the degree of constraint imposed on the artisan by processes at several phenomenological levels, can vary considerably among societies of different scales and complexity and among contexts of different psychological, social, economic, political, and natural environmental characters (e.g., Morris, Chapter 13; Wiessner 1989). Different assumptions about the artisan and the dynamics of style are relevant in studying material culture used in different contexts.

It is true that different archaeologists will, by their natures, have varying interests and will pursue the study of different determinants of material style, different aspects of material style, and different aspects of the artisan. Archaeologists and ethnologists study others, in part, in order to understand themselves and their own social and human conditions. At the same time, these more focused approaches would be better undertaken within a wider and much deeper understanding of the many determinants of material style, the many levels of the artisan that initiate or respond to those determinants, the varying kinds of contexts to which different sets of determinants pertain, and the

overall hierarchical organization of these components of the causal world, the artisan, and material style. It is for the better that archaeologists strive to be more holistic in their understandings, if not their particular studies, of material style and its causes. Only by taking a broader, more integrated approach that offers many complementary interpretations is it possible to sift through and find that more limited set that is truest to a past people and their endeavors and to come to know, appreciate, and learn from them, rather than project ourselves and our favored paradigms onto them.

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